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*Time-  
Dated  
Material*

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The *California Regulatory Notice Register* is an official state publication of the Office of Administrative Law containing notices of proposed regulatory actions by state regulatory agencies to adopt, amend or repeal regulations contained in the California Code of Regulations. The effective period of a notice of proposed regulatory action by a state agency in the *California Regulatory Notice Register* shall not exceed one year [Government Code § 11346.4(b)]. It is suggested, therefore, that issues of the *California Regulatory Notice Register* be retained for a minimum of 18 months.

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## PROPOSED ACTION ON REGULATIONS

*Information contained in this document is published as received from agencies and is not edited by the Office of State Publishing.*

### TITLE 2. MANAGED RISK MEDICAL INSURANCE BOARD

#### CONFLICT OF INTEREST CODE

NOTICE IS HEREBY GIVEN that the California Managed Risk Medical Insurance Board (MRMIB) is proposing to take the action described in the Informative Digest.

#### INFORMATIVE DIGEST/POLICY STATEMENT OVERVIEW

MRMIP proposes to amend its Conflict of Interest Code, printed in Title 2 of the California Code of Regulations (CCR), Section 54400, to update the list of positions and their filing requirements under the Code. Appendix A, Section 54400, Chapter 55 is amended to update the positions utilized by the Board in its workforce which involve the making or participation in the making of decisions which may foreseeably have a material financial effect on any financial interest.

#### WRITTEN COMMENT PERIOD

Any person interested may present statements or arguments in writing relevant to the proposed action. **Written comments, including those sent by mail, facsimile, or email, shall be sent to the address listed under Contact Person in this Notice, and must be received at MRMIB's office not later than 5:00 p.m. on February 25, 2003.**

#### PUBLIC HEARING

No public hearing has been scheduled on the proposed action. However, if any person desires to submit oral comments, the Board will schedule a public hearing upon that person's written request. **Such request must be received no later than 15 days prior to the close of the written comment period, which is 5 p.m. on February 25, 2003.** A written request for a hearing may be made to the contact person named below.

#### MODIFICATION OF PROPOSED ACTION

MRMIB upon its own motion or at the instance of any interested party may thereafter adopt the proposals substantially as described below or may modify such proposals if such modifications are sufficiently related

to the original text. With the exception of technical and grammatical changes, the full text of any modified proposal will be available for 15 days prior to its adoption from the persons who submit written or oral testimony related to this proposal or who have requested notification of any changes to the proposal.

Authority: Section 87306, Government Code.

Reference: Sections 87300, 87301, 87302 and 87306, Government Code.

#### FISCAL IMPACT ESTIMATES

Fiscal Impact on Public Agencies Including Costs or Savings to State Agencies or Costs/Savings in federal Funding to the State: None

Nondiscretionary Costs/Savings to Local Agencies: None

Local Mandate: None

Cost to Any Local Agency or School District for Which Government Code Section 17561 Requires Reimbursement: None

#### BUSINESS IMPACT

MRMIB has made an initial determination that the proposed regulatory action would have no significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states.

The following studies/relevant data were relied upon in making the above determination: None. These regulations only impact employees of MRMIB.

#### IMPACTS ON JOBS/NEW BUSINESSES

MRMIB has determined that this regulatory proposal will not have a significant impact on the creation of jobs or new business or the elimination of jobs or existing businesses or the expansion of businesses in the State of California.

#### COST IMPACT ON REPRESENTATIVE PRIVATE PERSONS OR BUSINESSES

MRMIB is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed regulatory amendments.

Effect on Housing Costs: None

#### EFFECT ON SMALL BUSINESS

These proposed amendments will not have any impact upon small businesses because they will only affect employees of MRMIB. These regulations only impact the employees of MRMIB.

#### FEDERAL MANDATE

MRMIB is not proposing to adopt or amend a regulation mandated by the federal law which is identical to a previously adopted or amended federal regulation.

## CONSIDERATION OF ALTERNATIVES

MRMIB must determine that no reasonable alternative which it considered or that has otherwise been identified and brought to its attention would either be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposal described in this Notice.

## INITIAL STATEMENT OF REASONS

MRMIP has prepared an initial statement of reasons for the proposed action and has available all the information upon which the proposal is based.

## TEXT OF PROPOSAL

Copies of the exact language of the proposed regulations and of the initial statement of reasons, and all of the information upon which the proposal is based, may be obtained upon request by contacting the person named below. The exact language and initial statement of reasons are also available at the MRMIB web site at <http://www.mrmib.ca.gov>.

## AVAILABILITY AND LOCATION OF THE FINAL STATEMENT OF REASONS AND RULEMAKING FILE

All the information upon which the proposed regulations are based is contained in the rulemaking file which is available for public inspection by contacting the person named below.

You may obtain a copy of the final statement of reasons once it has been prepared, by making a written request to the contact person named below or accessing the web site listed below.

## CONTACT PERSON

Inquiries or comments concerning the proposed action may be addressed to:

Name: Donald Minnich  
Address: MRMIB  
1000 G Street, Suite 450  
Sacramento, CA 95814  
Telephone No: (916) 327-7978  
FAX No: (916) 327-6580  
E-Mail Address: [dminnich@mrmib.ca.gov](mailto:dminnich@mrmib.ca.gov)

## WEBSITE INFORMATION

Materials regarding this proposal may be found at <http://www.mrmib.ca.gov>.

## TITLE 13. AIR RESOURCES BOARD

### NOTICE OF PUBLIC HEARING TO CONSIDER ADOPTION OF THE 2003 AMENDMENTS TO THE CALIFORNIA ZERO EMISSION VEHICLE REGULATION

The Air Resources Board (Board or ARB) will conduct a public hearing at the time and place noted below to consider adoption of amendments to the California Zero Emission Vehicle (ZEV) regulation.

DATE: February 27, 2003  
TIME: 9:00 a.m.  
PLACE: California Environmental Protection Agency  
Air Resources Board  
Auditorium, Second Floor  
1001 "I" Street  
Sacramento, CA 95814

This item will be considered at a two-day meeting of the ARB, which will commence at 9:00 a.m., February 27, 2003, and may continue at 8:30 a.m., February 28, 2003. This item may not be considered until February 28, 2003. Please consult the agenda for the meeting, which will be available at least 10 days before February 27, 2003, to determine the day on which this item will be considered.

This facility is accessible to persons with disabilities. If accommodation is needed, please contact ARB's Clerk of the Board at (916) 322-5594, or Telecommunications Device for the Deaf (TDD) (916) 324-9531 or (800) 700-8326 for TDD calls from outside the Sacramento area, by February 13, 2003, to ensure accommodation.

### INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW

**Sections Affected:** Amendments to title 13, California Code of Regulations (CCR), section 1962 and the incorporated "California Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck, and Medium-Duty Vehicle Classes" as last amended July 30, 2002.

### Background

The California ZEV regulation was originally adopted in 1990, as part of the ARB's first Low-Emission Vehicle (LEV I) regulations. It established an ambitious program to dramatically reduce the environmental impact of light-duty vehicles through the gradual introduction of ZEVs into the California fleet. As originally adopted, the ZEV regulation required that specified percentages of the passenger

cars and lightest light-duty trucks (called the LDT1 category) produced by each of the seven largest auto manufacturers be ZEVs, starting in 1998. The percentages were 2 percent for the 1998–2000 model years (MYs) and 5 percent for the 2001–2002 MYs. A requirement of 10 percent ZEVs applied to all but small-volume manufacturers starting in MY 2003. The regulation also included a marketable credits system. Although the regulation did not require a specific technology, the expectation at that time was that the requirements would be met by the introduction of battery electric vehicles (EVs).

In 1996 the ARB amended the ZEV regulation to allow additional time for the technology to develop. The requirement for 10 percent ZEVs in MYs 2003 and beyond was maintained, but the percentage ZEV requirements for MYs 1998 through 2002 were eliminated. At the same time, the ARB entered into Memoranda of Agreement (MOAs) with the seven largest auto manufacturers. Under the MOAs the manufacturers agreed to place more than 1,800 advanced-battery EVs in California in the years 1998 through 2000, and the ARB agreed to work with state and local governments to help develop ZEV infrastructure and remove barriers to ZEV introduction.

As part of the 1998 “LEV II” rulemaking, the Board adopted amendments that allowed manufacturers to use partial allowances of 0.2 or more generated from vehicles with extremely low emissions (referred to as partial ZEV allowance vehicles or PZEVs) to meet the 10 percent ZEV requirement. To be certified as a PZEV, a vehicle must meet the ARB’s most stringent exhaust emission standards, have zero evaporative emissions, and be covered by an emissions warranty for 15 years or 150,000 miles, whichever occurs first. However, a large-volume manufacturer was required to have a minimum of 4 percent of its California fleet of passenger cars and lightest trucks be vehicles classified as “full” ZEVs.

### The 2001 Amendments to the ZEV Regulation

Following a January 2001 hearing, the ARB adopted major amendments to the ZEV regulation that were designed to maintain progress towards commercialization of ZEVs while recognizing the market constraints created primarily by the cost of battery technology. The amendments maintained a core ZEV component, but significantly reduced the cost of the program—primarily through a reduction in the number of vehicles required in the near term and a further broadening in scope of the vehicle technologies allowed. The key elements of the 2001 amendments pertinent to this rulemaking are described below.

*Reducing the number of ZEVs needed in the near term.* Several amendments reduced the number of ZEVs required in the early years of the program. The amendments established multipliers that provided extra credits for ZEVs in the early years. ZEVs introduced before the 2006 MY received early introduction multipliers of 4.0 for the 2001 and 2002 MYs and 1.25 for the 2003–2005 MYs. A separate “NEV discount” multiplier reduced the credits earned by Neighborhood Electric Vehicles (NEVs)—which have a top speed of no more than 25 miles per hour—to 0.625 for the 2004 and 2005 MYs because of their limited functionality. For 2006 and subsequent years the credits earned by NEVs were further reduced to 0.15. The early introduction multipliers for ZEVs in a given model year and the extended range multiplier described below were only available to ZEVs that not only were “delivered for sale” but were also “placed in service.” The Initial Statement of Reasons for the rulemaking indicated that to earn multiple allowances, manufacturers would be required to certify to the Executive Officer the number of vehicles placed in service during the course of the model year.

*Reducing the number of PZEVs needed in the near term.* The amendments added PZEV early introduction multipliers that reduced the number of PZEVs needed to meet the maximum PZEV allowance amount to 25 percent of the preexisting requirement in MY 2003, 50 percent in MY 2004, and 75 percent in MY 2005. Manufacturers were also provided two years to make up a PZEV shortfall rather than the one year previously allowed.

*Allowing advanced technology PZEVs to satisfy one-half of the “pure ZEV” requirement and increasing their allowances.* Qualifying advanced technology vehicles that were not ZEVs were permitted to satisfy up to one half of the four percent “pure ZEV” portion of the ZEV requirement. These were known as Advanced Technology PZEVs (AT PZEVs), defined as any PZEVs earning a ZEV allowance of more than 0.2, not including the early introduction multiplier. One category of AT PZEVs consisted of PZEVs such as grid-connected hybrid electric vehicles with an all-electric range of 10 miles or more; the additional “zero emission vehicle miles traveled (VMT) allowance” for these vehicles varied from about 0.4 to 2 depending on the electric range. Another category of AT PZEVs—those using a fuel such as compressed natural gas with very low fuel-cycle emissions—qualified for an additional allowance of up to 0.2, depending on the degree to which the vehicle uses that fuel.

A third category of AT PZEVs included vehicles that employed “advanced ZEV componentry” but did not qualify for a zero-emission VMT allowance—vehicles such as a non-grid connect gasoline hybrid



electric vehicle. For this category, the amendments established three alternative performance-based paths that the manufacturer could use to calculate the allowance: (1) CO<sub>2</sub> savings, (2) vehicle efficiency, or (3) through MY 2007 only, the percent of peak power that comes from the battery. The calculations for the first two methods relied on the vehicle's fuel economy as measured by the U.S. Environmental Protection Agency (U.S. EPA). The vehicle had to meet a threshold performance level to qualify for any allowance; for qualifying vehicles the amount of the allowance increased with the vehicle's performance. The amendments also provided an additional allowance of 0.1 for vehicles that use gaseous or hydrogen fuel storage.

*Expanding ZEV range credits and adding an efficiency multiplier for ZEVs and AT PZEVs.* Modifying ZEV extended range credit provisions that had been added in 1996, the amendments reduced the minimum range needed for multiple credits to 50 miles, with credits increasing with range up to 10 credits for a range of 275 miles or more. Because a vehicle with a refueling time of less than 10 minutes earned the maximum credit regardless of range, a hydrogen fuel cell vehicle earned 10 credits, not including any phase-in multiplier.

A ZEV or AT PZEV having an efficiency at least 50 percent greater than the average for its size class qualified for a new efficiency multiplier. All vehicle efficiencies (gasoline, CNG, electric) were converted into the common units of California Miles per Equivalent Gallon (CMPEG). The multiplier earned was the larger of 1.0 or the vehicle CMPEG divided by the baseline. For ZEVs, the efficiency multiplier partially replaced the range multiplier on a phased-in basis beginning in MY 2005, and the combined value of the range and efficiency multipliers was gradually reduced, resulting in larger numbers of vehicles in later years. For AT PZEVs, the efficiency multiplier took effect beginning in MY 2002.

*Increasing the percentage ZEV requirement in later years.* The 10 percent ZEV requirement for large and medium-duty manufacturers was ramped up to 11 percent for the 2009–2011 MYs, 12 percent for the 2012–2014 MYs, 14 percent for the 2015–2017 MYs, and 16 percent for 2018 and subsequent MYs. During these ramp-ups, the portion of the ZEV requirement that could be satisfied by 0.2 allowance PZEVs was held at 6 percent. Thus the pure ZEV portion gradually increases from 4 percent in the 2003 through 2008 MYs to 10 percent by 2018. Up to one half of this pure ZEV portion could be satisfied with allowances from AT PZEVs.

*Phased addition of LDT2 vehicles to the base for calculating a manufacturer's ZEV obligation.* At the January 2001 hearing the Board decided to modify the originally proposed amendments to phase in a new requirement that "LDT2" vehicles be included in the base for determining a manufacturer's full percentage ZEV obligation, along with the passenger cars and LDT1 vehicles that had always been included. The LDT2 category includes most sport utility vehicles (SUVs), minivans, and larger pickup trucks. The addition of LDT2 vehicles was phased in beginning in the 2007 MY, when 17 percent of the manufacturer's California LDT2 production would be counted. The percentage increased by 17 percent increments through the 2011 MY, with a 100 percent requirement starting in the 2012 MY. Full inclusion of LDT2 vehicles increases the base across all manufacturers by an average of about 70 percent, although the impacts differ among individual manufacturers.

*Restricting the future use of "banked" credits earned by NEVs.* To avoid the possibility that manufacturers could place large numbers of NEVs in these early years and thereby amass enough credits from NEVs alone to avoid producing ZEV program vehicles for a number of years, the amendments capped the use of such credits in future years. NEV credits earned in prior years could only be used to satisfy 75 percent of a manufacturer's ZEV obligation in MY 2006 and 50 percent in MY 2007 and beyond.

*Miscellaneous other changes.* Various other changes made by the 2001 amendments included permitting additional ZEV credits for ZEVs, AT PZEVs and PZEVs placed as part of a transportation system in MYs 2001–2007. Additional credits were also authorized for a vehicle in California service for more than three years with an extended battery or fuel cell stack warranty.

## Litigation and Other Recent Developments

There have been three lawsuits filed by General Motors and DaimlerChrysler challenging the 2001 ZEV Amendments and their implementation; the first two also named some Fresno-area auto dealers as additional plaintiffs.

*The federal preemption lawsuit.* One of the cases was filed in January 2002 in federal district court in Fresno, asserting that the provisions pertaining to AT PZEVs that are gasoline hybrids are related to fuel economy standards and accordingly are preempted by the Energy Policy and Conservation Act of 1975—the law that directed the National Highway Traffic Safety Administration to establish corporate average fuel economy (CAFE) standards. On June 11, 2002, a federal district judge issued a preliminary injunction

that prohibits the ARB's Executive Officer from enforcing the 2001 ZEV Amendments with respect to the sale of new motor vehicles in the 2003 or 2004 MYs, pending final resolution of the case. The judge issuing the preliminary injunction found that the plaintiffs were likely to succeed in their preemption claim. He rejected arguments that the optional nature of the AT PZEV provisions eliminated preemption concerns, because he found that disparities in costs among the various compliance options in effect required manufacturers to produce gasoline hybrids. He enjoined enforcement of all of the 2001 ZEV Amendments based on the conclusion that the challenged AT PZEV provisions likely were not severable from the rest of the ZEV program. The ARB has appealed issuance of the preliminary injunction to the U.S. Court of Appeals for the Ninth Circuit, which has scheduled oral argument for the appeal on February 13, 2003. In the interim, the preliminary injunction remains in effect.

*The first state court lawsuit.* The second case was filed in January 2002 in the Fresno County Superior Court with Isuzu Motors as an additional plaintiff. As most recently amended, the complaint identifies seven theories under which the 2001 ZEV amendments are claimed to be partially or wholly invalid. One allegation is that the amendments adding LDT2s to the base for the percentage ZEV requirements was beyond the scope of the original hearing notice and could not be adopted without a new notice. There are also claims that the ARB did not comply with the California Environmental Quality Act (CEQA), that the ZEV regulation is inconsistent with the ARB's authorizing statutes, and that the Board failed to make a rational cost-effectiveness determination. On December 19, 2002 the trial court denied the automakers' motion for summary judgment and a trial court hearing on the merits is expected after January 2003.

*The second state court lawsuit.* On December 11, 2002, DaimlerChrysler and General Motors filed a second lawsuit in Fresno County Superior Court, this time challenging a November 21, 2002 guidance letter transmitted by the ARB's Executive Officer to vehicle manufacturers. The letter responded to inquiries on when 2002 MY NEVs would need to be placed in service in order to qualify for the 2002 MY early introduction multiplier—in case the preliminary injunction was lifted or the issue became relevant in the context of subsequent amendments to the ZEV regulation. The Executive Officer interpreted the regulation as allowing a MY 2002 ZEV to receive the 4.0 multiplier only if it is placed in service by the end of March 2003. Following a December 17 hearing, a temporary restraining order was issued temporarily prohibiting enforcement of the March 31, 2003 deadline as established in the guidance letter.

*Technology developments.* When the Board amended the regulation in 2001, it did so with the understanding that near-term compliance with the pure ZEV portion of the regulation would be expensive for automakers, but that continued vehicle and technology development would lead to less costly approaches. Since that time, there have been no significant reductions in the cost of battery EVs. Meanwhile, the marketing of battery EVs has been met with only modest success, with only NEVs emerging as a commercial although limited usage product. These factors, along with the federal lawsuit, have slowed or even halted automaker plans regarding battery EV development.

In addition, projections regarding the pace of commercialization of fuel cells, which were projected to provide a second ZEV technology late in this decade, have become less certain although automakers remain fully committed and continue to invest heavily in the technology. As a result, it appears that under the current regulation manufacturers will need to develop additional battery EV products to bridge the interim years until fuel cells are available in larger quantities in the next decade.

### **The Proposed 2003 ZEV Amendments**

Although the staff believes that the challenged AT PZEV provisions are not preempted by federal law and that the federal preliminary injunction should be reversed on appeal, there is no doubt that the injunction has introduced considerable uncertainty regarding the ZEV regulation that would not necessarily be ended by a reversal by the Ninth Circuit Court of Appeal. Removal of this uncertainty is essential for the ZEV program to move ahead. While there are advantages to the scoring provisions for gasoline hybrid AT PZEVs and the efficiency multiplier in the 2001 amendments, the staff has developed what it considers to be a satisfactory alternative approach that removes all references in the regulation to fuel economy and addresses the preemption concerns.

The staff has also developed additional proposed amendments that are designed to maintain pressure on the commercialization of ZEV technologies while recognizing the current state of the technology and the cost implications related to their development. The staff proposal includes the following elements:

*Delaying start of the percentage ZEV requirements until the 2005 MY.* The proposed amendments would delay the start of the percentage ZEV requirements two years, until the 2005 MY. Qualifying MY 2004 and earlier ZEVs, AT PZEVs and PZEVs would generate credits or allowances that could be used in future MYs.

*Deleting the efficiency multiplier for AT PZEVs and ZEVs, and changing the methods for awarding allowances for AT PZEVs.* The staff proposal eliminates the efficiency multiplier for AT PZEVs and ZEVs. The amendments would increase the advanced componentry allowance for a vehicle with a high-pressure hydrogen storage system from 0.1 to 0.2. There would be no change to the 0.1 allowance for a vehicle equipped with a qualifying high pressure gaseous fuel storage system. The amendments would eliminate the three current methods—the CO<sub>2</sub> reduction method, the efficiency method and the peak power method—that establish sliding scales for awarding allowances to PZEVs with other advanced ZEV componentry, including gasoline hybrids. In their place would be a flat allowance of 0.4 in the 2003–2011 MYs, and 0.35 in the 2012 and subsequent MYs for any PZEV with advanced ZEV componentry that meets either of two threshold criteria: a “peak power ratio” of greater than 13 percent, or a “peak power ratio” of greater than 8 percent with a zero emission drive system maximum power rating of at least 10 kilowatts. These provisions would be accompanied by an express severability clause, and a more general severability clause would also be added to the regulation.

The amendments would also change the way other AT PZEV allowances are determined. The maximum overall cap for PZEVs with low fuel-cycle emissions would be increased from 0.2 to 0.3 and the applicable

equation would be revised to increase the allowance by 50 percent. The allowance for zero emission VMT for hybrid electric vehicles and the phase-in multiplier for AT PZEVs with any zero emission vehicle miles traveled would also be increased. The amendments would add a cap on total AT PZEV allowances for any technology type of 3.0 starting in the 2012 MY.

*Changing the way credits from ZEVs are calculated and applied.* Along with removing the efficiency multiplier for ZEVs, the amendments would make a series of changes to simplify the calculation and encourage sustainable commercialization of ZEVs. They would identify five ZEV “types” that would be the basis for awarding ZEV credits: NEVs, Type 0 (utility low-range ZEVs), Type I (mid-range ZEVs like City electric vehicles), Type II (longer-range ZEVs like full-function battery electric vehicles) and Type III (long range, fast-refueling ZEVs like fuel cell vehicles). A 2003 and subsequent MY ZEV, other than a NEV, would earn 1 ZEV credit when it is produced and delivered for sale in California. A 2003 and subsequent MY ZEV would earn additional credits based on the earliest model year in which it is placed in service (not earlier than the ZEV’s model year). The following table shows the total number of credits the ZEV would earn, including the credit not contingent on placement in service, if it is placed in service in the specified model year or by March 31 after the end of the model year.

Tier	Model Year in Which ZEV is Placed in Service									
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012+
NEV	1.25	0.625	0.625	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Type 0 (Utility)	1.5	1.5	1.5	1.5	1.5	1.5	1	1	1	1
Type I (city)	8	8	8	7	7	5	2	2	2	2
Type II	12	12	12	10	10	7	3	3	3	3
Type III	40	40	40	15	15	15	4	4	4	3

Proposed additional amendments affecting the ZEV credit calculations reflect the above changes to the structure of the calculation and experience with the program to date. These proposed changes include modification of the fast refueling definition and elimination of the in-service/warranty credit for MY 2005 and later.

*Expanding manufacturers’ compliance options prior to the 2012 MY.* The amendments would allow a manufacturer to use AT PZEVs to meet three-quarters rather than one-half of its MY 2005–2011 ZEV obligation that could not be met with PZEVs. This would mean that for MYs 2005–2008 only 10 percent of the manufacturer’s overall ZEV obligation would

have to be met with ZEVs or credits from ZEVs. During the 2009–2011 MYs, an increase in the permitted AT PZEV share would mean that only 1.25 percent of a manufacturer’s applicable California passenger car, LDT1 and LDT2 production volume would have to be ZEVs. These amendments are proposed to create a slower ramp up of volumes of pure ZEVs and to encourage an increase in AT PZEV volumes in the early years.

Additionally, staff proposes that ZEVs be removed from the sales volume used to calculate the ZEV requirement. Also, staff proposes elimination of the cap on the use of banked NEV credits when used to meet obligations that can be satisfied with allowances from PZEVs or AT PZEVs.



*Refining the "placed in service" requirements.* The amendments would provide that a 2001–2002 MY ZEV qualifies for the early introduction multiplier of 4.0 only if it is placed in service in California by April 15, 2003. If it is placed in service after that time, it would be subject to the credit provisions applicable to 2003 and subsequent MY ZEVs as described above.

*Miscellaneous changes.* The energy storage device on a hybrid electric PZEV is currently required to be warranted for 15 years or 150,000 miles, whichever occurs first. The proposed amendments would revise the warranty requirement for the energy storage device to 10 years or 150,000 miles. The amendments would also extend the sunset date on the award of transportation system credits from MY 2007 to MY 2011, and remove credits earned by vehicles from the cap on the use of transportation system credits.

*Reaffirmation of the phased addition of LDT2s.* During the comment period in this rulemaking, the Board will accept comment on whether it should reaffirm the changes in the 2001 ZEV amendments that phase in a requirement that LDT2 vehicles be included in the base for calculating a manufacturer's ZEV obligation. In MY 2007, 17 percent of the manufacturer's California LDT2 production is to be counted. The percentage increases by 17 percent increments through the 2011 MY, with a 100 percent requirement starting in the 2012 MY. The staff is proposing that, at the conclusion of the hearing, the Board reaffirm the inclusion of these provisions in the ZEV regulation.

#### AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

The ARB staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for the proposed regulatory action, which includes a summary of the potential environmental and economic impacts of the proposal, and supporting technical documentation. The staff report is entitled: "Initial Statement of Reasons for Rulemaking, Proposed 2003 Amendments to the California Zero Emission Vehicle Regulation."

Copies of the ISOR and the full text of the proposed regulatory language, in underline and strike-out format to allow for comparison with the existing regulations, may be obtained from the ARB's Public Information Office, Environmental Services Center, 1001 "I" Street, First Floor, Sacramento, California 95814, (916) 322-2990, at least 45 days prior to the scheduled hearing (February 27, 2003).

Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact persons in this notice, or may be accessed on the web site listed below.

Inquiries concerning the substance of the proposed regulations may be directed to the designated agency contact persons: Chuck Shulock, Vehicle Programs Specialist, at (916) 322-6964, or Analisa Bevan, Manager, ZEV Implementation Section, Mobile Source Control Division at (916) 323-8966.

Further, the agency representative and designated back-up contact persons to whom non-substantive inquiries concerning the proposed administrative action may be directed are Artavia Edwards, Manager, Board Administration & Regulatory Coordination Unit, (916) 322-6070, or Amy Whiting, Regulations Coordinator, (916) 322-6533. The Board has compiled a record for this rulemaking action, which includes all the information upon which the proposal is based. This material is available for inspection upon request to the contact persons.

If you are a person with a disability and desire to obtain this document in an alternative format, please contact the Air Resources Board ADA Coordinator at (916) 323-4916, or TDD (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

This notice, the ISOR, and all subsequent regulatory documents, including the FSOR, when completed, are available on the ARB Internet site for this rulemaking at

<http://www.arb.ca.gov/regact/zev2003/zev2003.htm>.

#### COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED

The determinations of the Board's Executive Officer concerning the costs or savings necessarily incurred in reasonable compliance with the proposed regulations are presented below.

The Executive Officer has determined that the proposed regulatory action will not create costs or savings, as defined in Government Code section 11346.5(a)(6), to any state agency or in federal funding to the state, costs or mandate to any local agency or school district whether or not reimbursable by the state pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code, or other nondiscretionary savings to local agencies.

The Executive Officer has made an initial determination that the proposed regulatory action will not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states, or on representative private persons.

In accordance with Government Code section 11346.3, the Executive Officer has initially determined that the proposed amendments should have minimal or no impacts on the creation or elimination of jobs within the State of California, minimal or no impacts on the creation of new businesses and the elimination

of existing businesses within the State of California, and minimal or no impacts on the expansion of businesses currently doing business within the State of California.

In developing this regulatory proposal, the ARB staff evaluated the potential economic impacts on private persons and businesses. Any business involved in manufacturing, purchasing or servicing passenger cars and light-duty trucks could be affected by the proposed amendments. Also affected are businesses that supply parts for these vehicles. Some affected businesses may be small businesses. California accounts for only a small share of total nationwide motor vehicle and parts manufacturing. As discussed below, the Executive Officer has determined that the proposed regulatory action will not have a significant cost impact on directly affected persons or businesses.

As with the 2001 amendments to the ZEV regulation, comparing the projected compliance costs associated with the current regulations and the proposed amendments involved consideration of two key factors: (1) the number of vehicles that are required to be placed, and (2) the incremental cost per vehicle. Both factors must be estimated, and both estimates are subject to considerable uncertainty, in large part because of the compliance flexibility provided. Nevertheless, the direction of the cost impact of the proposed amendments is clear—they will reduce the cost of the program—but the magnitude of the savings is more difficult to assess.

Overall, staff estimates the cost savings resulting from the proposed amendments for model year 2005 through 2011 range from an estimated \$375 million to \$3,623 million. In addition to the modifications proposed herein, staff is proposing that the Board reconsider and reaffirm the inclusion of LDT2 vehicles to the sales base. This component of the existing regulation was added as part of the post-Board hearing modification in the 2001 rulemaking. The costs of this provision are taken into account in the estimated savings noted above.

**PZEVs:** In the Initial Statement of Reasons for the 2001 amendments, ARB staff estimated that the incremental cost for PZEV compliance was \$500. In the Final Statement of Reasons for that rulemaking, this estimate was reduced to \$200 based on new information. Today, based on staff analysis of the most recent vehicles certified by manufacturers, staff estimates that the incremental cost for a PZEV is \$100. Under the amendments proposed herein, the number of PZEVs required, and thus the incremental cost of compliance, will not change. Assuming full use of PZEVs, the costs for Stage I (MYs 2003–2005) are \$27.5 million, increasing to \$51.1 million at the end of Stage II (MYs 2006–2008), and \$66.3 million at the end of Stage III (MYs 2012 and beyond).

**AT PZEVs:** In the 2000 Biennial Review Staff Report and the Initial Statement of Reasons for the 2001 ZEV amendments, the incremental cost for an AT PZEV was estimated to be \$3,300 in the near term and \$1,100 in volume production. Staff currently estimates that the incremental cost for an AT PZEV is \$3,300 in Stage I, \$1,500 in Stage II, \$1,200 in Stage III, and \$700 in 2012 and beyond. It should be noted that the incremental cost of hybrid electric vehicles within this category will be partially offset by vehicle attributes such as performance or fuel economy for which consumers are willing to pay a premium estimated to exceed \$1,000. The use of this premium results in a “negative” incremental cost in 2012 and beyond—in other words by 2012 the hybrid electric vehicle is estimated to be less expensive to own and operate over its lifecycle than a conventional vehicle.

Assuming manufacturers make full use of the AT PZEV option under staff’s proposal, manufacturers are expected to produce more AT PZEVs than under the current regulation; thus the overall incremental cost of compliance in this category will exceed that expected under the current regulation. Specifically, in 2005, the incremental cost under the proposed amendments is \$39.6 million compared to \$31 million under the existing regulation; in 2008 at the end of Stage II, the incremental cost under staff’s proposal is \$32 million compared to \$24 million under the existing regulation; and in 2011 at the end of Stage III, the incremental cost under the proposal is \$21 million compared to \$15 million under the existing regulation. The higher incremental cost for this category of vehicles, however, will be more than offset by reductions resulting from changes in requirements for the ZEV category.

**ZEVs:** In this analysis staff uses the battery EV cost estimates from the 2000 Biennial Review Staff Report because there has not been any significant changes affecting those estimates since that time. In that report, the total near term incremental cost for full function battery electric vehicles was estimated to range between \$13,000 and \$24,000, depending on the type of vehicle and the battery employed. For City EVs the near term incremental cost ranged from \$7,500 to \$10,000. Costs in volume production were estimated to range from \$1,500 to \$11,000, again depending on the type of vehicle and the battery used. The two reports did not include an estimate of the incremental cost of fuel cell EVs. For this proposal, staff estimates the incremental costs for a fuel cell vehicle to be \$1 million in Stage I, \$300,000 in Stage II, \$120,000 in Stage III, and \$10,000 in MYs 2012 to 2020.

The estimated incremental cost of the pure ZEV portion of the regulation decreases significantly under the staff proposal, due to the fact that this category in total is reduced to one-half of its current size, while the credits earned per vehicle are increased over time. As

a result manufacturers will not be required to produce as many ZEVs—whether they are full function battery EVs, city cars or fuel cell electric vehicles—particularly in the early years of the program.

With the proposed changes, the incremental cost of compliance for the ZEV component of the program is zero at the end of Stages I and II and approximately \$83 million, \$117 million and \$225 million for city EVs, full function EVs and fuel cell EVs, respectively, in 2011 at the end of Stage III. This compares to incremental costs under the existing regulation of \$109 million, \$94 million and \$1,290 million for city EVs, full function EVs, and fuel cell EVs, respectively, in 2008 at the end of Stage II, and \$234 million, \$221 million and \$1,440 million for those categories in 2011 at the end of Stage III.

Staff reiterates that these estimates are subject to considerable uncertainty. While there is no doubt that staff's proposed changes will reduce the cost of compliance, the magnitude of the savings is much more difficult to assess.

Before taking final action on the proposed regulatory action, the Board must reasonably determine that no alternative considered by the agency would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons or businesses than the proposed action.

#### SUBMITTAL OF COMMENTS

The public may present comments relating to this matter orally or in writing at the hearing, and in writing or by e-mail before the hearing. To be considered by the Board, written submissions not physically submitted at the hearing must be received no later than **12:00 noon, February 26, 2003**, and addressed to the following:

Postal Mail is to be sent to:

Clerk of the Board  
Air Resources Board  
1001 "I" Street, 23<sup>rd</sup> Floor  
Sacramento, California 95814

Electronic mail is to be sent to: [zev2003@ltserv.arb.gov](mailto:zev2003@ltserv.arb.gov) and received at the ARB by no later than **12:00 noon, February 26, 2003**.

Facsimile submissions are to be transmitted to the Clerk of the Board at (916) 322-3928 and received at the ARB no later than **12:00 noon, February 26, 2003**.

The Board requests, but does not require, 30 copies of any written statement be submitted and that all written statements be filed at least 10 days prior to the hearing so that ARB staff and Board Members have time to fully consider each comment. The ARB encourages members of the public to bring any

suggestions for modification of the proposed regulatory action to the attention of staff in advance of the hearing.

#### STATUTORY AUTHORITY

This regulatory action is proposed under that authority granted in sections 39600, 39601, 43013, 43018, 43101, 43104 and 43105 of the Health and Safety Code. This action is proposed to implement, interpret and make specific sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43204 and 43205.5 of the Health and Safety Code.

#### HEARING PROCEDURES

The public hearing will be conducted in accordance with the California Administrative Procedure Act, title 2, division 3, part 1, chapter 3.5 (commencing with section 11340) of the Government Code. Following the public hearing, the ARB may adopt the regulatory language as originally proposed or with nonsubstantial or grammatical modifications. The ARB may also adopt the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice that the regulatory language as modified could result from the proposed regulatory action. Potential modifications include, but are not limited to, prevention of a ZEV product blackout, minimizing the impact of section 177 of the federal Clean Air Act on manufacturers, inclusion of credit for fueling infrastructure deployment or stationary fuel cells, amendment of treatment of credits from 2004 and earlier MY PZEVs, adjustment of credits earned by AT PZEVs and the threshold performance requirements to earn advanced componentry credit, the treatment of specialty vehicles, and requirements for length of vehicle placement to earn credits. In the event that such modifications are made, the full regulatory text, with the modifications clearly indicated, will be made available to the public for written comment at least 15 days before it is adopted. The public may request a copy of the modified regulatory text from the ARB's Public Information Office, Environmental Services Center, 1001 "I" Street, First Floor, Sacramento, California 95814, (916) 322-2990.

### TITLE 16. BOARD OF BEHAVIORAL SCIENCES

NOTICE IS HEREBY GIVEN that the Board of Behavioral Sciences (Board) is proposing to take the action described in the Informative Digest. Any person interested may present statements or arguments relevant to the action.



Written comments, including those sent by mail, facsimile, or e-mail to the addresses listed under Contact Person in this Notice, must be received by the Board at its office not later than 5:00 p.m. on February 24, 2003.

The Board does not currently intend to hold a hearing on this matter. If any interested party wishes that a hearing be held, he or she must make the request in writing to the Board. The request must be received in the Board office no later than 15 days prior to the close of the written comment period.

The Board, upon its own motion or at the instance of any interested party, may thereafter adopt the proposals substantially as described below or may modify such proposals if such modifications are sufficiently related to the original text. With the exception of technical or grammatical changes, the full text of any modified proposal will be available for 15 days prior to its adoption from the person designated in this Notice as contact person and will be mailed to those persons who submit written or oral testimony related to this proposal or who have requested notification of any changes to the proposal.

Authority and Reference: Pursuant to the authority vested by Sections 4980.60, 4987, 4990.14 of the Business and Professions Code, and to implement, interpret or make specific Sections 730, 4980.03, 4980.60, 4982, 4987, 4986.70, 4986.71, 4990.14, 4992.3, 4992.33, 4996.11 of said Code, Section 11166 of the Penal Code, and 15630 of the Welfare and Institutions Code, the Board is considering changes to Division 18 of Title 16 of the California Code of Regulations as follows:

#### **INFORMATIVE DIGEST/POLICY STATEMENT OVERVIEW**

Business and Professions Code Sections 4982, 4986.70, and 4992.3 outlines the violations that would warrant discipline for unprofessional conduct. Regulation Sections 1845, 1858, and 1881 define additional violations not included in law that constitute unprofessional conduct. Although the Board can currently discipline for violations of the sections of law that relate to reporting elder abuse and dependent adult abuse, the Board believes that it is necessary to include these in regulation to further clarify these violations to licensees and consumers.

These proposals will amend Sections 1845, 1858, and 1881 to include failure to report elder and adult dependent abuse as a violation that would constitute unprofessional conduct. Additionally, these proposals will correct grammatical errors and remove reference to a section of law in 1858 (m) that does not apply.

#### **FISCAL IMPACT ESTIMATES**

Fiscal Impact on Public Agencies Including Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None

Nondiscretionary Costs/Savings to Local Agencies: None

Local Mandate: None

Cost to Any Local Agency or School District for Which Government Code Section 17561 Requires Reimbursement: None

Business Impact:

The Board has made an initial determination that the proposed regulatory action would have no significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states.

#### **AND**

The following studies/relevant data were relied upon in making the above determination: None

Impact on Jobs/New Businesses:

The Board has determined that this regulatory proposal will not have any impact on the creation of jobs or new businesses or the elimination of jobs or existing businesses or the expansion of businesses in the State of California.

Cost Impact on Representative Private Person or Business:

The Board is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

Effect on Housing Costs: None

#### **EFFECT ON SMALL BUSINESS**

The Board has determined that the proposed regulations would not affect small businesses since this proposal would include failure to report elder and adult dependent abuse as a violation that would warrant discipline for unprofessional conduct against a Marriage and Family Therapist, a Licensed Educational Psychologist, and a Licensed Clinical Social Workers and would correct grammatical errors in the regulation sections.

#### **CONSIDERATION OF ALTERNATIVES**

The Board must determine that no reasonable alternative it considered to the regulation or that has otherwise been identified and brought to its attention would either be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposal described in this Notice.



Any interested person may present statements or arguments in writing relevant to the above determinations to the address listed under Contact Person.

### INITIAL STATEMENT OF REASONS AND INFORMATION

The Board has prepared an initial statement of the reasons for the proposed action and has available all the information upon which the proposal is based.

### TEXT OF PROPOSAL

Copies of the exact language of the proposed regulations and of the initial statement of reasons, and all of the information upon which the proposal is based, may be obtained upon request from the Board of Behavioral Sciences at 400 R Street, Suite 3150, Sacramento, California 95814.

### AVAILABILITY AND LOCATION OF THE FINAL STATEMENT OF REASONS AND RULEMAKING FILE

All the information upon which the proposed regulations are based is contained in the rulemaking file which is available for public inspection by contacting the person named below.

You may obtain a copy of the final statement of reasons once it has been prepared, by making a written request to the contact person named below or by accessing the website listed below.

### CONTACT PERSON

General or substantive inquiries or comments concerning the proposed rulemaking action may be addressed to:

Name: Julie McAuliffe  
Address: 400 R Street, Suite 3150  
Sacramento, CA 95814  
Telephone No.: 916-445-4933, extension 1142  
Fax No.: 916-323-0707  
E-Mail Address: BBSWebMaster@bbs.ca.gov

The backup contact person is:

Name: Sherry Mehl  
Address: 400 R Street, Suite 3150  
Sacramento, CA 95814  
Telephone No.: 916-445-4933  
Fax No.: 916-323-0707  
E-Mail Address: BBSWebMaster@bbs.ca.gov

Website Access: Materials regarding this proposal can be found at [www.bbs.ca.gov](http://www.bbs.ca.gov).

## GENERAL PUBLIC INTEREST

### CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY DEPARTMENT OF TOXIC SUBSTANCES CONTROL

#### Final Decision to Certify Hazardous Waste Environmental Technologies

The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) intends to certify the following company's hazardous waste environmental technology:

Applicant: Cooper Power Systems, Inc.  
1900 East North Street  
Waukesha, Wisconsin 53188

Technology: Envirotemp®FR3™ Vegetable Oil-  
Based Insulating Dielectric Fluid

Chapter 412, Statutes of 1993, Section 25200.1.5, Health and Safety Code, enacted by Assembly Bill 2060 (AB 2060 by Assemblyman Ted Weggeland) authorizes DTSC to certify the performance of hazardous waste environmental technologies. The purpose of the certification program is to provide an in-depth, independent review of technologies at the manufacturers' level to facilitate regulatory and end-user acceptance. Only technologies that are determined to not pose a significant potential hazard to the public health and safety or to the environment when used under specified operating conditions may be certified. Incineration technologies are explicitly excluded from the certification program.

DTSC makes no express or implied warranties as to the performance of the manufacturer's product or equipment. The end-user is solely responsible for complying with the applicable federal, state, and local regulatory requirements. Certification does not limit DTSC's authority to require additional measures for protection of public health and the environment.

By accepting certification, the manufacturer assumes, for the duration of certification, responsibility for maintaining the quality of the manufactured equipment and materials at a level equal to or better than was provided to obtain certification and agrees to be subject to quality monitoring by DTSC as required by the statute under which certification is granted.

DTSC's proposed decision to certify was published on November 29, 2002 in the California Regulatory Notice Register 2002, Volume No. 48-Z, pp. 2256-2268 and was subject to a 30-day public review and comment period.

Cooper Power Systems submitted comments that the acute toxicity tests performed, as part of this certification evaluation did not fully comply with the procedures specified in the California Code of Regulations. Specifically, Cooper expressed concern that the sample preparation method selected produced an emulsion of the vegetable oil-based Envirotemp®FR3™ fluid with water. Cooper contends that the produced emulsion presented a physical toxicity by coating the gills of the test fish, and that the Department should have selected an alternative sample preparation procedure which evaluates the systemic rather than the physical toxicity of their product. Cooper references test results of an independent laboratory using a different sample preparation procedure, which found their product to produce zero mortality in fish. The complete text of Cooper's comments is provided under Section 6 of this notice.

Although the Department appreciates and understands the vendor's concerns, the Department disagrees with the vendor that the aquatic bioassay testing was not performed properly. A review of the aquatic bioassay test results and procedures found that the tests were performed in accordance with procedures set forth in California regulation for the determination of hazardous waste acute toxicity. The Department acknowledges that its aquatic bioassay test procedure may be more sensitive than most other methods, and does not distinguish between physical or systemic toxicity.

Additional information supporting DTSC's final decision is included in the May 2002 Final U.S. EPA Environmental Technology Verification Report, and is available for review. DTSC's Final Certification shall become effective on February 1, 2003. Requests for additional information concerning the final decision should be submitted to the following address:

California Environmental Protection Agency  
Department of Toxic Substances Control  
Office of Pollution Prevention and Technology  
Development  
P.O. Box 806  
1001 I Street, 12th Floor  
Sacramento, California 95812-0806  
Attn: Suzanne Davis (916) 327-4206  
[http://www.dtsc.ca.gov/sciencetechnology/TechCert\\_index.html](http://www.dtsc.ca.gov/sciencetechnology/TechCert_index.html)

A description of the technology to be certified, the certification statement and the certification conditions and limitations for the technology of the company listed above follow.

CERTIFICATION PROGRAM (AB 2060) FOR  
HAZARDOUS WASTE  
ENVIRONMENTAL TECHNOLOGIES

FINAL NOTICE OF TECHNOLOGY  
CERTIFICATION ENVIROTEMP®FR3™  
VEGETABLE OIL-BASED INSULATING  
DIELECTRIC FLUID

**Technology:** Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid

**Manufacturer:** Cooper Power Systems, Inc.  
1900 East North Street  
Waukesha, Wisconsin 53188

**Technology Description**

Cooper Power Systems, Inc. (Cooper) has developed a vegetable oil-based dielectric fluid comprised of greater than 98.5% vegetable oil and less than 1.5% additives. The additives include antioxidants to prevent the unsaturated bonds in the oil from polymerizing with oxygen from the air, and color to visually differentiate it from mineral oil. The Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid (Envirotemp®FR3™) is manufactured using a food-grade vegetable oil purchased from an off-site processor. Each vegetable oil shipment is tested and compared to Cooper's quality control specifications before it is accepted. At Cooper's facility, the oil is degassed and then blended with antioxidants and color additives. During and after the blending process, the product is tested and compared to Cooper's product specifications.

Envirotemp®FR3™ fluid is used in electrical apparatus such as liquid-filled transformers as an electrical insulating medium. In addition to providing electrical insulation, the oil transports heat generated around the transformer's windings, core and connected circuits to cooling surfaces where the heat is dissipated by radiation and convection to the outside air.

The main parts of a transformer are the core, the windings, the tank containing the core and windings, and the cooling system. The core is made of thin steel sheets laminated with varnish or an oxide film to insulate the sheets from each other. Two distinct sets of coils called windings are wound upon the core at a suitable distance from each other. These windings consist of wire insulated with a kraft paper covering. When the transformer is in-service, the oil and core expands and contracts as the heat generated by the transformer windings varies with the load. As the oil becomes heated, the hot oil rises to the top of the transformer where heat is dissipated to the outside, and then moves along the case to the bottom. Fins are sometimes attached to deflect moving air against the case and to increase the cooling area. Overheating the

core can lead to damage, and overheating the windings can cause the paper insulation to deteriorate, which reduces the life of the transformer. Nearly all distribution transformers in the United States are sealed to prevent the oil from oxidizing with the air.

Envirotemp®FR3™ dielectric fluid exhibits a high fire point (>300°C), and is classified by Underwriter Laboratories (UL) and approved by Factory Mutual Research Center (FMRC) as a less flammable transformer fluid. Typically, the less-flammable fluids are used in transformers where additional fire safety is required, such as inside buildings, rooftops, vaults, and adjacent to buildings. Under Section 450-23 of the National Electrical Code (NEC), the installation requirements for less-flammable liquid insulated transformers in fire-sensitive areas are simpler than those for transformers filled with mineral oil.

## Basis for Certification

### Evaluation Approach

The Envirotemp®FR3™ fluid evaluation was designed to provide the data necessary to draw conclusions on the technology's performance, chemical composition, toxicity, and safety. The evaluation included a review of supporting documents, information, and laboratory data submitted by Cooper, and field sampling to provide independent data on the technology's performance, chemical composition, and toxicity.

The field sampling was conducted at Cooper's manufacturing facility in Waukesha, Wisconsin, at San Mateo High School in San Mateo, California, and at Texas Instruments in Santa Cruz, California. San Mateo High School and Texas Instruments are customers of Artwel Electric, Inc. (Artwel), Cooper's distributor. Artwel and Cooper agreed to provide staff and access to these in-service transformers as part of the field sampling activities. Prior to the field sampling, DTSC staff prepared a Technology Evaluation Workplan (Workplan) to identify specific field objectives, data quality objectives, testing procedures, and roles and responsibilities. Cooper assumed overall responsibility for providing staff for sampling and obtaining access to all locations where field sampling was conducted. DTSC staff provided independent oversight and were present to observe all field sampling activities.

The oldest transformer in-service with Envirotemp®FR3™ fluid as the dielectric insulating fluid is 4.8 years old. Since the technology is still new, no data was available to assess the performance of Envirotemp®FR3™ fluid over a transformer's life or the fluid's waste characteristics at the end of the transformer's service life. According to Cooper, Envirotemp®FR3™ fluid has passed the Institute of Electrical and Electronic Engineers (IEEE) accelerated

life tests which requires a tested transformer to have an operational equivalence of 100 years. This operational equivalence is five times the normal transformer life. According to Cooper, the insulation in the Envirotemp®FR3™ transformers showed less degradation than the insulation in identical transformers using mineral oil per this test. Based on this information, the normal service life is expected to be in the range of 20 years.

### Verification Objectives

The field sampling objectives were to verify the applicant's technology performance claims for the Envirotemp®FR3™ dielectric insulating fluid listed below.

- **Verification/Certification Claim #1—General Performance:** Envirotemp®FR3™ fluid meets the dielectric breakdown specifications listed in ASTM D3487, *Standard Specification for Mineral Insulating Oil*, and ASTM D5222, *Standard Guide for High Fire Point Fluids of Petroleum Origin*, IEEE C57.121, *1998 IEEE Guide For Acceptance and Maintenance of Less Flammable Hydrocarbon Fluid in Transformers*, IEC 1099, *Specifications for Unused Synthetic Organic Esters for Electrical Purposes*, and IEC 1203, *Synthetic Organic Esters for Electrical Purposes-Guide for Maintenance of Transformer Esters in Equipment*,
- **Verification/Certification Claim #2—Aquatic Biodegradability:** Envirotemp®FR3™ fluid biodegrades 99% based on the average of several biodegradation tests, as measured by OPPTS 835.3110, *Ready Biodegradability*,
- **Verification/Certification Claim #3—Flammability:** Envirotemp®FR3™ fluid has a flash point of at least 320°C, and fire point of 350°C, based on the average of several performance tests by independent labs performing ASTM D92 (Cleveland Open Cup),
- **Verification/Certification Claim #4—Acute Toxicity:** Virgin Envirotemp®FR3™ fluid passes the toxicity characteristic criteria in Code of California Regulations, Title 22, Section 66261.24(a)(6) as tested by U.S. EPA/600/4-90/027F Test for *Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, and
- **Other Verification/Certification Tests:** Verify that Envirotemp®FR3™ fluid consists of greater than 98.5% vegetable oil and less than 1.5% additives, and meets selected Cooper product specifications; establish a baseline for measuring potential metals leaching and oil degradation of Envirotemp®FR3 fluid under electrical loading over time; evaluate the worker health and safety aspects of



Envirotemp®FR3™ fluid; and estimate costs using Envirotemp®FR3™ fluid as compared to those of mineral oil.

#### *Verification Activities and Results*

As part of this verification/certification, DTSC developed a technology evaluation workplan, which described the sample collection procedures and analyses to be performed. Samples were collected under DTSC oversight to ensure the samples were independent and representative. Samples were assigned a field sample identification number, which was determined prior to sampling. Proper chains of custody and storage procedures were followed. Four different laboratories were used to analyze the collected samples: Doble Engineering for the American Standard Testing Methods (ASTM) methods, Silliker Laboratories for the Association of Analytical Chemists (AOAC) methods, DTSC Hazardous Materials Laboratory (HML) for the semi-volatile organic compounds (SVOCs) and metals analyses, Associated Laboratories for the fish bioassay (acute toxicity) tests, and Global Tox for the aquatic biodegradability tests. Each laboratory sent data and reports directly to DTSC.

Four samples from three different virgin product lots (a total of twelve samples) were collected at Cooper's dielectric fluid formulating facility in Waukesha, Wisconsin. Two lots were contained in 55-gallon drums while the third lot was contained in a 2,500-gallon finishing tank. Barrel samples were collected using a glass Coliwas. A new glass Coliwas was used at each new barrel sampled to reduce the potential of cross contamination between samples. The finishing tank samples were collected at a sampling spigot located beneath the tank. Approximately one pint of oil was drained from the tank via the spigot prior to sampling.

Three samples, one from each lot, were analyzed by the following methods: EPA Method 8270/3520 for SVOCs; EPA Method 6010/5030 for metals; U.S. EPA Method 600/4-90/027F for acute toxicity; U.S. EPA Method OPPTS 835.3110 for aquatic biodegradation; AOAC Method 981.11, Oils and Fats; AOAC Method 972.28, Total Fatty Acids in Oils and Fats; AOAC Method 963.22, Methyl Esters of Fatty Acids in Oils and Fats; AOAC Method 983.15, Phenolic Antioxidants in Oils, Fats, and Butter; AOAC Method 977.17, Polymers and Oxidation Products of Vegetable Oils; American Standard testing Methods (ASTM) Method D92, flash and fire point; ASTM Method D97, pour point; ASTM Method D445, kinematic viscosity at 0°C, 40°C, and 100°C; ASTM Method D877, dielectric breakdown (minimum); ASTM Method D1816, dielectric breakdown (gap); ASTM Method D3300, dielectric breakdown (impulse); ASTM Method D924,

dissipation factor at 25°C and 100°C; ASTM Method D971, interfacial tension; ASTM Method D974, neutralization number; and ASTM Method D1533, water content. One duplicate was analyzed for SVOCs, metals, and the AOAC and ASTM methods listed above. Two matrix spikes and an equipment blank were analyzed for SVOCs and metals. A field blank was analyzed for metals only.

Cooper also collected split samples from each lot sampled by DTSC. These split samples were analyzed by Cooper for dielectric breakdown voltage, dissipation factor at 25°C, water content, interfacial tension, neutralization number, pour point, flash and fire point, and viscosity at 40°C and 100°C using the above-specified ASTM methods. These samples were initially analyzed by Cooper to verify the dissipation values reported by Doble Engineering.

Four different in-service transformers were also sampled as part of this verification/certification: two owned by Cooper located in Waukesha, Wisconsin, one owned by San Mateo High School (SMHS) in San Mateo, California, and one owned by Texas Instruments (TI) in Santa Cruz, California. The sampled transformers were in service for **at least one year** and part of a regular sampling/testing environment. In-service fluid samples were collected by Cooper and Artwel representatives under DTSC oversight and in conjunction with the normal on-going sampling program. Only one sample per transformer was collected to minimize the amount of fluid removed from each transformer and the impact to the ongoing test program. New Tygon tubing connectors were used at each transformer fluid sampling port to reduce the potential of cross contamination.

The transformer pressure valve was checked to confirm the unit was under positive pressure prior to sampling. A stainless steel sampling cylinder with Tygon tubing was attached to the sampling port and used to purge oil from the transformer to ensure ambient air was not introduced into the transformer. After a few pints of oil had been purged through the sampling cylinder, the sample bottles were filled using Tygon tubing attached to the sampling cylinder.

The in-service transformer samples were analyzed using the same methods listed for the virgin product samples for SVOCs, metals, and the AOAC analyses. To minimize the amount of fluid removed from each transformer, the in-service transformer samples were only tested for dissipation factor at 25°C by ASTM Method D924, flash and fire point by ASTM D92, interfacial tension by ASTM Method D971, neutralization number by ASTM Method D974, water content by ASTM Method D1533, and conductivity by ASTM Method D4308.



In addition to field sampling conducted under DTSC oversight, DTSC staff reviewed internal product development testing data provided by Cooper. These data were collected as part of Cooper's ongoing internal testing program prior to entry into the verification/certification agreement. These data provided background information on the technology performance for past virgin lots and were used to develop trends on the fluid's performance in tested transformers for select ASTM parameters. Historical data collected by independent testing facilities under contract with Cooper were also used.

### 1. General Performance

As part of this verification/certification, Envirotemp®FR3™ fluid was tested for select physical, chemical, thermal, and dielectric properties to verify general performance claims listed in Cooper's product specifications. Since standard specifications do not exist for vegetable oil-based dielectric fluids, two ASTM specifications, two International Electrochemical Commission (IEC) specifications, and one IEEE specification were used to evaluate Envirotemp®FR3™ fluid performance. ASTM D3487 and ASTM D5222 were developed to evaluate the performance of virgin mineral oil-based dielectric fluids and virgin high molecular weight hydrocarbons (HMWH), respectively. IEEE C57.121 was developed to evaluate the performance of virgin silicone fluids. IEC 1099 and IEC 1203 were developed to evaluate the performance of virgin synthetic organic esters and in-service synthetic organic esters, respectively. These specifications were selected since Cooper claimed the dielectric breakdown for Envirotemp®FR3™ fluid was similar to that of mineral oil, HMWH, silicone and synthetic esters. The physical and chemical properties of Envirotemp®FR3™ fluid were only compared to Cooper specifications since these properties differ due to the nature of the fluid. Data variability reported in this section was calculated at 95% confidence.

### Virgin Product Performance Results

#### *Dielectric Properties (or Dielectric Strength)*

Dielectric breakdown is the common property used to evaluate a dielectric fluid's performance. The dissipation factor varies depending on the chemistry of the different types of dielectric fluids, and therefore these values were only compared to the Cooper specification.

#### Dielectric Breakdown

The minimum and gap dielectric breakdowns indicate the minimum voltage required to cause arcing between two submerged electrodes in a dielectric fluid. A low value may indicate the presence of water, dirt, or other electrically conductive particles in the oil, which may cause damage to the transformer core or

windings due to arcing. The minimum dielectric breakdown voltages for virgin Envirotemp®FR3™ samples averaged 45 kilovolts (kV)  $\pm$  1 kV and were higher than the lowest value listed for the four specifications. For the 0.04-inch (1.0 millimeters [mm]) gap dielectric breakdown, sample values averaged 37 kV  $\pm$  3 kV and were higher than the minimum voltage listed for all five specifications.

The impulse dielectric breakdown value is designed to determine the minimum voltage to cause arcing in the fluid under lightning or power surge conditions. The impulse breakdown voltage for all samples averaged 168 kV  $\pm$  4 kV and was higher than the minimum voltage listed for mineral oils under ASTM D3487 of 145 kV. Cooper does not have a specification value for the impulse breakdown voltage but this value typically ranges from 130 kV to 170 kV in virgin product.

#### Dissipation Factor

The dissipation factor is a measure of the dielectric losses to an insulating dielectric fluid (such as oil) when it is exposed to an alternating electric field. For ASTM Method D924, the dissipation factor is determined by passing an alternating electric current through a test cell filled with dielectric fluid and measuring the capacitance with an electronic bridge circuit. This value is used to control the product quality, and to determine changes in the fluid due to contamination or degradation during use. A low dissipation factor indicates a low dielectric loss and a low contaminant concentration (e.g., dirt, water, or metals).

The dissipation factor measured at 25°C averaged 0.143%  $\pm$  0.029%. Two of these samples had dissipation factors, which exceeded the Cooper specification value 0.150%. The dissipation factor measured at 100°C averaged 2.89%  $\pm$  0.59% and was greater than three previous sample results, which ranged from 1.4% to 1.9%. Cooper does not routinely test for the dissipation factor at 100°C and therefore has not defined a specification value. The dissipation factor for all samples measured at 25°C and 100°C exceeded the maximum value listed for the ASTM, IEEE and IEC specifications. Split samples, analyzed by Cooper, had a dissipation factor at 25°C of 0.131% and 0.097%, respectively. Past performance testing performed by Doble determined the dissipation factor at 25°C as 0.061%.

#### *Chemical Properties*

#### Neutralization Number

The neutralization number is used as a quality control parameter for lubricating oil. This number is determined by the amount of base required to titrate acidic substances contained in the oil. The acidic substances may be additives or degradation products formed during service, such as oxidation products.

When an in-service fluid is analyzed for this property, an increasing neutralization number over time may be an indicator of oil degradation due to oxidation. According to ASTM Method D974, this test cannot be used to predict the corrosiveness of oil under service conditions. There is no general correlation known between the neutralization number and the corrosive tendency of oils toward metals.

The neutralization number was consistent between lots with sample results averaging 0.03 milligrams of potassium hydroxide per gram (mg KOH/g)  $\pm$  0.01 mg KOH/g and met Cooper's, ASTM D3487, IEEE C57.121, and IEC 1099 specifications.

#### Water Content

Water content is used by industry to monitor a dielectric fluid's quality. It is an indicator of possible oil deterioration, which could adversely affect the oil's electrical properties such as dielectric breakdown. This value is based on the relative saturation of the water in the dielectric fluid. The relative saturation is based on the amount of water dissolved in the oil divided by the total amount of water the oil could hold at that temperature. The dielectric strength of oil starts to fall when saturation reaches about 50%. For petroleum based dielectric oils, 50% saturation at room temperature is 30–35 milligram per kilogram (mg/kg). Synthetic esters and vegetable oil contain about 500–600 mg/kg of water at room temperature and 50% saturation. Water content at or near 50% saturation may indicate the oil has deteriorated and may cause a lower dielectric breakdown voltage, which can damage the transformer core and windings.

Water content measured for all samples including the split samples analyzed by Cooper, averaged 55 parts per million (ppm)  $\pm$  5 ppm. These levels are less than the maximum water content of 75 ppm specified by Cooper and 200 ppm specified by IEC 1099. However, Envirotemp®FR3™ fluid did not meet the ASTM, IEEE, and IEC specifications and was not expected to meet these specifications.

#### Interfacial Tension

The interfacial tension was developed to gauge the presence of hydrophilic compounds in mineral oil. Interfacial tension is a measurement of the amount of force needed to detach a platinum ring from the water-oil interface. In practice, this value has been found to be a good indicator of oil degradation due to oxidation. A lower interfacial tension value indicates a higher hydrophilic or water content in the oil which may adversely affect the oil's dielectric properties.

The interfacial tension value measured for all samples, including split samples analyzed by Cooper, averaged 28 dynes per centimeter (dynes/cm)  $\pm$  1 dynes/cm and met Cooper's specification of  $\geq$  18 dyne/cm. Envirotemp®FR3™ fluid did not meet the

ASTM, IEEE, and IEC specifications and was not expected to meet these specifications. These specifications were based on fluids with different chemical properties.

#### *Physical Properties*

##### Pour Point

The pour point indicates the lowest temperature at which oil can be used. The pour point was consistently measured at  $-18^{\circ}\text{C}$  for all samples and met the Cooper specification of  $\leq -18^{\circ}\text{C}$ . The two split samples analyzed by Cooper had pour points at  $-22^{\circ}\text{C}$ . Envirotemp®FR3™ fluid did not meet the ASTM, IEEE, and IEC specifications and was not expected to since these specifications were based on fluids with different physical properties.

##### Viscosity

The dielectric fluid's viscosity is used by transformer designers to confirm that the fluid is appropriate for the unit under certain operating conditions. The viscosity of Envirotemp®FR3™ fluid was measured at  $0^{\circ}\text{C}$ ,  $40^{\circ}\text{C}$ , and  $100^{\circ}\text{C}$ , and averaged 187.42 centistoke (cSt)  $\pm$  0.72 cSt at  $0^{\circ}\text{C}$ , 32.71 cSt  $\pm$  0.11 cSt at  $40^{\circ}\text{C}$ , and 7.93 cSt  $\pm$  0.09 cSt at  $100^{\circ}\text{C}$ . The two split samples analyzed by Cooper had viscosities of 32.13 cSt and 32.68 cSt at  $40^{\circ}\text{C}$ , and 7.47 cSt and 7.49 cSt at  $100^{\circ}\text{C}$ . Envirotemp®FR3™ fluid met Cooper specifications for viscosity at  $40^{\circ}\text{C}$  and  $100^{\circ}\text{C}$ . Cooper has no specification for viscosity at  $0^{\circ}\text{C}$ . However, Envirotemp®FR3™ fluid did not meet the ASTM, IEEE, and IEC specifications and was not expected to since these specifications were based on fluids with different physical properties.

#### In-service Transformer Fluid Results

The sample results for the dissipation factor at  $25^{\circ}\text{C}$  ranged from 0.120% to 0.196% and met the Cooper and IEC 1203 in-service fluid specifications of  $\leq 1.0\%$  and  $\leq 0.8\%$ , respectively. Historical data for the oldest in-service transformers appeared to gradually increase over time. The relatively small changes in the data over the service life for the oldest transformers indicate the fluid has not degraded with use.

The sample results for the water content ranged from 33 ppm to 98 ppm and met both the Cooper and IEC 1203 specifications of  $\leq 400$  ppm for in-service fluid. The water content after more than one year of service is similar for all four transformers. Again, the historical data for the oldest transformers appears to show a gradual increase over time. The minor increase indicates the fluid has not degraded with use.

Interfacial tension results for the samples ranged from 23 dynes/cm to 26 dynes/cm and met the Cooper specification of  $\geq 18$  dynes/cm. The IEEE C57.121 specification of  $\geq 24$  dynes/cm was also met except for one sample. Although the data for the fluid in the

oldest transformers have increased over time, the interfacial tension values have remained above the minimum value specified by Cooper. The current data trend for the oldest transformers indicates the fluid has not degraded with use.

The neutralization number for all four samples ranged from 0.01 mg KOH/g to 0.08 mg KOH/g and met the Cooper and IEC 1203 specifications of  $\leq 2.5$  mg KOH/g and  $\leq 2.0$  mg KOH/g for in-service fluid. Three of the four samples also met the ASTM D3487 specification of  $\leq 0.03$  mg KOH/g. Comparing the values for all four transformers after one year of service, one sample had a value comparable to virgin product. Data collected over the oldest transformers' service lives were well below the maximum value specified by IEC 1203 of 2.0 mg KOH/g. The small fluctuations in the data for the oldest transformers indicate the fluid has not degraded with use.

The conductivity values were converted to volume resistivity (1 picosiemens per meter [pS/m] =  $1.0 \times 10^{14}$  ohms-centimeter [ $\Omega\text{cm}$ ]) for comparison to IEC 1203 criteria. The converted values for the four samples ranged from  $5.9 \times 10^{12}$   $\Omega\text{cm}$  to  $9.4 \times 10^{12}$   $\Omega\text{cm}$  which were above the minimum IEC 1203 volume resistivity of  $6.00 \times 10^{11}$   $\Omega\text{cm}$ .

The historical results for the two oldest transformers indicate that the oil has degraded little over the service period. As the service life of the transformers increases, the interfacial tension will drop as the water content, dissipation factor and neutralization factor rise. The changes in these parameters for Envirotemp®FR3™ fluid would also be expected to be observed in mineral oil transformers.

## 2. Aquatic Biodegradability

Three virgin Envirotemp®FR3™ samples, one from each lot, were analyzed by U.S. EPA Office of Pollution, Pesticides, and Toxic Substances (OPPTS) 835.3110, *Ready Biodegradability*, using the carbon dioxide (CO<sub>2</sub>) evolution method. Each sample and a replicate were tested in parallel per OPPTS 835.3110. The degree of biodegradation was calculated by dividing the cumulative amount of CO<sub>2</sub> produced by Envirotemp®FR3™ fluid after 28 days by the product of the theoretical total organic content times a conversion factor of 3.67 (ratio of the molecular weight of carbon dioxide [44] to the molecular weight of carbon [12]).

The average biodegradability of Envirotemp®FR3™ fluid after 28 days was 120%  $\pm$  33% at 95% confidence. The greater than 100% result may be due to CO<sub>2</sub> leakage from the stock solution apparatus. The removal and replacement of the barium hydroxide (Ba(OH)<sub>2</sub>) absorber every few days may have caused the testing apparatus to leak CO<sub>2</sub> at connectors. The testing apparatus consists of a

stoppered flask connected to a series of Ba(OH)<sub>2</sub> absorbers with flexible tubing. A CO<sub>2</sub> leak from the stock solution would result in the calculated amount of CO<sub>2</sub> (difference between the CO<sub>2</sub> evolved from a mixture of the test substance and stock solution, and the CO<sub>2</sub> evolved from the stock solution) for the test substance to be higher and cause the cumulative CO<sub>2</sub> amount to be greater than the theoretical CO<sub>2</sub> amount. One of the reference documents for OPPTS 835.3110 noted a CO<sub>2</sub> production rate of 125% might be possible due to CO<sub>2</sub> leakage from the stock solution apparatus.

A known readily biodegradable material (phthalic acid) was also tested in parallel. The reference stock solution had a biodegradation rate of >60% after 14 days and after 28 days which verified that the appropriate test system and bacteria inoculum were used. This test was developed as a screening method for ready biodegradability and should be considered a qualitative measurement. Historical biodegradability results provided by Cooper reported an average biodegradability of 99% in 28 days.

While mineral oil was not tested as part of this study, literature data are available on biodegradability using equivalent methods to OPPTS 835.3110. A U.S. Army Corp of Engineers document reported the biodegradation rates for conventional mineral oil ranged from 42–49% after 28 days using U.S. EPA Method 560/6-82-003, Aerobic Aquatic Biodegradability. Another study by Conservation of Clean Air and Water-Europe (CONCAWE) reported a ready biodegradation rate for a light naphthenic distillate mineral oil of 28% after 28 days when analyzed by OECD 301B, Sturm test. These results agree with those reported by Thomas Edison Research Center (TERC) which is owned by Cooper Power Systems and provided the historical biodegradability results reported above for Envirotemp®FR3™ fluid. TERC reported average biodegradation rates after 28 days of 30.5% for Univolt 60, a mineral oil-based transformer fluid; 21.3% for R-Temp, a HMWH transformer fluid; and 98% for Envirotemp®FR3™ fluid.

Based on these results, the virgin Envirotemp®FR3™ fluid appears to biodegrade more readily than mineral oil. Although Envirotemp®FR3™ fluid biodegrades, releases to water should be prevented. The product's ability to degrade in the environment is dependent on factors such as geography, pH, temperature, oxygen concentration, dispersal of oil, the presence of other chemicals, soil characteristics, nutrient quantities, and populations of various microorganisms at the location.

## 3. Flammability

The flash point and fire point for virgin and in-service Envirotemp®FR3™ fluid were determined using ASTM Method D92, Cleveland Open Cup test.



The flash point was measured to assess the overall flammability of the fluid and determine the presence of volatile or flammable material at elevated temperatures. The fire point was measured to determine the temperature at which the fluid could support combustion. These values were compared to the Cooper specification, ASTM D3487 specification for flash point, and ASTM D5222 specification for fire point. Data variability was calculated at 95% confidence. The virgin product samples had flash and fire points averaging  $328^{\circ}\text{C} \pm 11^{\circ}\text{C}$  and  $363^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , respectively. The in-service transformer samples had flash and fire points ranging from  $328^{\circ}\text{C}$  to  $340^{\circ}\text{C}$  and from  $362^{\circ}\text{C}$  to  $364^{\circ}\text{C}$ , respectively.

The fire point results were slightly higher than those obtained by Underwriters Laboratory (UL) of  $358^{\circ}\text{C}$ . The flash point determined by UL was  $255^{\circ}\text{C}$  and was lower due to the different test method. UL has classified Envirotemp®FR3™ fluid as a dielectric medium and transformer fluid with a fire hazard rating of 4 to 5 which is less hazardous than paraffin oil. Envirotemp®FR3™ fluid is one of five products listed by UL as a Class 4 to 5 dielectric medium and one of three products listed as a Class 4 to 5 transformer fluid.

Envirotemp®FR3™ fluid is also classified as a less flammable transformer fluid by Factory Mutual Research Center (FMRC). Envirotemp®FR3™ fluid is one of ten products classified as a less flammable transformer fluid. The other products classified as less flammable consist of silicone oil-based, HMWH, or vegetable oil-based transformer fluids. FMRC also identified Envirotemp®FR3™ fluid as an alternative to high fire point hydrocarbons, silicone fluids, and synthetic esters or hydrocarbons where fire resistance, improved high temperature operation, and improved cooling are desired.

#### 4. Acute Toxicity

Three virgin Envirotemp®FR3™ samples, one from each lot, were analyzed using U.S. EPA method, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, EPA/600/4-90/027F, August 1993. The test used juvenile pimephales promelas (fathead minnow). Samples were prepared using the wrist-action shaker method to dissolve the oil, in accordance with the "Static Acute Bioassay Procedures for Hazardous Waste Samples" developed by the California Department of Fish and Game, Water Pollution Control Laboratory and specified in the Code of California Regulations, Title 22, Section 66261.24(a)(6). Associated Laboratories also performed a second and parallel set of tests using adult pimephales promelas (fathead minnow) at the same concentrations.

The  $\text{LC}_{50}$  values were less than 250 mg/L for the juvenile fathead minnows and averaged  $317 \text{ mg/L} \pm 169 \text{ mg/L}$  at 95% confidence for the adult fathead minnows. Historical  $\text{LC}_{50}$  results provided by Cooper were greater than 1,000 mg/L, indicating that virgin Envirotemp®FR3™ fluid would pass the California aquatic toxicity criterion. These results indicate that virgin Envirotemp®FR3™ fluid does not pass the toxicity criteria specified under California hazardous waste regulations.

A DTSC fish toxicologist reviewed the verification/certification sample results and historical testing results provided by Cooper to identify the differences which could lead to such conflicting results. The main difference between the two sets of results was the sample preparation method used. Samples with the lower  $\text{LC}_{50}$  results were prepared using the wrist-action shaker method cited in 22CCR Section 66261.24(a)(6). The higher  $\text{LC}_{50}$  results provided by Cooper used an acetone carrier solvent, which made the oil miscible in water per OECD Procedure 203, *Fish Acute Toxicity Test*. Oil samples prepared using the wrist action method stratifies the oil at the top of the tank. Fish swimming through this upper layer of the tank are thought to become coated with the product and gill exchange will be impaired. Oil samples prepared using the wrist shaker method are thought to provide a more realistic result for conditions which may occur during an environmental release. Samples prepared using the OECD method are thought to provide results that reflect systemic or chemical impacts on fish.

In California, insoluble, viscous waste samples are prepared using the wrist-shaker method and ultrasonic method, and sometimes the solvent carrier method as part of the fish bioassay screening tests for hazardous waste characterization. The preparation method yielding the most conservative  $\text{LC}_{50}$  result is then used to perform the definitive tests. This methodology is required by DTSC Waste Evaluation Unit and overseen by the Department of Health Services Environmental Laboratory Accreditation Program's Aquatic Toxicity Bioassay Section who certifies laboratories performing aquatic toxicity tests for DTSC. Cooper disagrees with DTSC's methodology (see vendor's comment section listed below for Cooper's opinion). The reader should note that this methodology is used to characterize the hazardous characteristics for **waste**. Any statement concerning the hazardous characteristic of the Envirotemp®FR3™ fluid applies to the **spent (waste)** fluid only and is not intended to classify the virgin product.

The average  $\text{LC}_{50}$  for virgin Envirotemp®FR3™ fluid was less than 250 mg/L which indicates the spent Envirotemp®FR3™ fluid might exhibit a hazardous characteristic per 22CCR Section 66261.24(a)(6). This



determination is based on a limited set of data and a conservative interpretation of the California hazardous waste characterization regulations. The end-user should characterize their spent Envirotemp®FR3™ fluid at the time of disposal since changes to the oil may occur due to use, storage, or age. End-users should also consult their appropriate local regulatory authority about applicable waste characteristic regulations and available disposal options in their area.

#### 5a. Chemical Composition

The chemical compositions of the virgin and in-service fluids were analyzed by selected AOAC methods, by EPA Method 8270 for SVOCs, and by EPA Method 6010 for metals analysis. The AOAC methods were selected to provide a chemical “fingerprint” for Envirotemp®FR3™ fluid. Data variability was calculated at 95% confidence.

The virgin Envirotemp®FR3™ samples averaged  $23.77\% \pm 0.16\%$  monounsaturated fatty acid,  $59.89 \pm 0.10\%$  polyunsaturated fatty acids, and  $15.66\% \pm 0.11\%$  saturated fatty acids. These results agree closely with the formulation provided by Cooper. The in-service Envirotemp®FR3™ samples had 22.00% to 23.74% monounsaturated fatty acid, 59.85% to 62.35% polyunsaturated fatty acids, and 15.20% to 16.24% saturated fatty acids, which were also consistent with Cooper’s formulation.

AOAC Method 983.15, *Phenolic Antioxidants in Oils, Fats, and Butter Oil*, was used to determine the concentration of seven commonly used antioxidants in food grade oils and fats. The average phenolic antioxidant concentration for the virgin product was  $2,787 \text{ ppm} \pm 834 \text{ ppm}$ . The in-service transformer samples had antioxidant concentrations between 3,950 ppm and 4,600 ppm.

The polymers and oxidation product values determined by AOAC Method 977.17 are simple indicators used in the food industry to assess the quality of vegetable oil after exposure to heat. If higher values are reported for oil as it is reheated, the difference is assumed to show an increase in non-elution material (compounds not removed using a solvent) that indicates the polar compounds in the oil are degrading. Compared to the average virgin product value of  $1.2\% \pm 0.3\%$ , the in-service fluid samples had values ranging from less than 1.0% to 2.8%. Three of the four samples from in-service transformers had values greater than 1.1% indicating slight degradation with use.

For the 65 standard SVOC compounds analyzed by the HML lab, none were detected in the virgin product samples. Bis-(2-ethylhexyl)phthalate, butyl benzyl phthalate, and di-n-butyl phthalate were detected in the in-service transformer samples. These compounds were suspected to be contaminants introduced from

the sampling equipment and DI water used. Other tentatively identified compounds were various sterols normally found in vegetable oils.

Barium and zinc were detected in the virgin product samples at 26 mg/kg and 36 mg/kg, and at 11 mg/kg and 24 mg/kg, respectively. Barium and zinc were also detected in two in-service transformer samples at 25 mg/kg and 27 mg/kg, and at 12 mg/kg to 13 mg/kg, respectively. Cadmium and molybdenum were detected in one in-service transformer sample at 0.42 mg/kg and 2.6 mg/kg, respectively. The barium and zinc might have been introduced during the processing of the basestock oil, degassing of the oil, or storage in the finishing tank.

#### 5b. Worker Health and Safety Aspects

DTSC reviewed material safety data sheets (MSDSs) and information on a transformer unit and its operation to determine potential hazards and regulations associated with Envirotemp®FR3™ usage. These hazards were then compared to potential hazards associated with select mineral oil-based and silicone oil-based transformer fluids. The discussion of the potential hazards and regulations below is not considered comprehensive. The end-user is still responsible for identifying potential hazards and implementing applicable regulations associated with worker health and safety.

The Envirotemp®FR3™ dielectric insulating fluid is composed  $>98.5\%$  vegetable oil and  $<1.5\%$  additives (e.g., antioxidants and color). The antioxidants used in this product are not listed as a hazardous material and have been cleared for use as a food grade antioxidant. Although the components of Envirotemp®FR3™ fluid are food-grade, this product was not intended for human consumption and should not be used as a food product.

According to the Envirotemp®FR3™ material safety data sheet (MSDS), this product is also not considered a hazardous substance as defined under Title 8, California Code of Regulations, Section 5194, Hazard Communications. However, this does not relieve the end-user who uses this product from providing workers with information and training necessary to handle Envirotemp®FR3™ fluid safely. Workers should review the MSDS and be familiar with the information concerning first aid procedures, physical properties, personal protective equipment (PPE), respiratory protection, and slip hazards. Workers should wash skin that has contacted the product with soap and water. For eye contact, the eyes should be flushed with water. The primary physical property workers should be aware of is the product’s flash point of greater than  $300^{\circ}\text{C}$ . In the case of an Envirotemp®FR3™ spills, employees should be aware of the increased slip hazard in the affected area due to the product.

Before working with Envirotemp®FR3™ fluid, employees should ensure the work area has adequate ventilation, and the appropriate respiratory protection and protective clothing are selected. When working with hot Envirotemp®FR3™ fluid, workers should don neoprene gloves, rubber boots and aprons. Respiratory protection should only be worn if oil mists or dusts contaminated with oil are detected at concentrations equal to or exceeding the permissible exposure limit (PEL). Occupational Safety and Health Administration (OSHA) has set the PEL for vegetable oil mist as a nuisance particulate at 15 milligram per cubic meter (mg/m<sup>3</sup>) and 5 mg/m<sup>3</sup> for respiratory protection for an 8-hour time-weighted average (TWA) exposure. In California, the nuisance particulate PEL is 10 mg/m<sup>3</sup>. The end-user should consult the appropriate regulatory authority about applicable nuisance particulate PELs used in their area.

If the transformer is located in a poorly ventilated area, then workers should use appropriate engineering controls to ventilate the area. Based on the MSDS information on Envirotemp®FR3™'s antioxidants, the Envirotemp®FR3™ fluid may produce carbon monoxide, carbon dioxide, nitrogen oxides, and other toxic compounds when the antioxidants thermally decompose. Mineral oil-based and silicone oil-based transformer fluids may also thermally decompose and produce fumes, smoke, carbon monoxide, aldehydes and other products. For some mineral oil-based transformer fluids, sulfur oxides are also listed as a possible decomposition product while silicon dioxide is listed for some silicone oil-based fluids. No data are available on the composition of emissions from transformers in general.

When comparing the PPE requirements for handling Envirotemp®FR3™ fluid to select mineral oil-based transformer fluids, the requirements were found to be similar. This comparison is based on MSDS information for select mineral oil-based transformer fluids obtained from the Vermont Safety Information Resources, Inc. (SIRI) MSDS archive. Respiratory protection for the mineral oil-based transformer fluids is required at a lower nuisance particulate OSHA PEL of 5 mg/m<sup>3</sup> for an 8-hour TWA exposure compared to Envirotemp®FR3™ fluid. For select silicone oil-based transformer fluids found in the Vermont SIRI MSDS archive, workers are advised to don impervious gloves and chemical goggles when handling the fluid.

Occupational exposure to transformer fluid is limited and associated to infrequent activities such as filling, draining, or sampling of transformers. These activities are not likely to generate a mist or aerosol at concentrations approaching the PEL. Potential hazards associated with filling or draining the transformer include slipping on work surfaces where the product was spilled, or splashing of the material into the eyes

or onto the skin. Potential hazards associated with sampling the transformer include coming in contact with extremely hot oil, potential electrical arcing from the transformer, or slipping hazards due to spilled Envirotemp®FR3™ fluid on the floor.

MSDS information for three silicone transformer fluids identified as less-flammable transformer oils by UL and FMRC were reviewed along with several mineral oil-based transformer fluids listed in the Vermont SIRI MSDS Archive. Health and safety information on the components listed on the MSDSs were compared to information listed in the 2000 edition of Sax's Dangerous Properties of Industrial Materials. The primary component of the mineral oil-based transformer fluid was a hydrotreated light naphthenic petroleum distillate (Chemical Abstract service [CAS] No. 64742-53-6) ranging from 30–100% which was identified as an International Agency for Research on Cancer (IARC) confirmed carcinogen based on experimental data for animals. The primary ingredient of the silicone oil-based transformer fluids was dimethyl polysiloxane (CAS No. 63148-62-9) listed at 100% and identified as a combustible liquid, a teratogen, and the cause of reproductive effects based on experimental data on animals.

#### 5c. Estimated Cost of Envirotemp®FR3™ fluid versus Mineral Oil

An average life for a transformer using Envirotemp®FR3™ fluid is estimated to be 20 years. A new Cooper transformer unit containing Envirotemp®FR3™ fluid costs approximately 1.2–1.3 times more than a comparable new Cooper mineral oil transformer. The price of the Envirotemp®FR3™ fluid is approximately \$9–10 per gallon depending on the volume purchased. The fluid is available in 5-gallon containers, 55-gallon drums, 200-gallon totes, 6,000-gallon tanker trucks, or by the rail car. Prices for mineral oil typically range from \$2 to \$4 per gallon depending on quantity. Monitoring costs will vary depending on the maintenance program the purchaser has in place. The waste characterization cost for a transformer using Envirotemp®FR3™ fluid or mineral oil are anticipated to be approximately the same except for mineral oil suspected to contain PCBs where the costs will be higher. The disposal cost for mineral oil and Envirotemp®FR3™ fluid are assumed to be comparable since data are not available on the waste characteristics of Envirotemp®FR3™ fluid after 20 years of use.

For a retrofilled transformer, no additional costs due to modifications on the transformer unit are incurred for using Envirotemp®FR3™ fluid. The costs associated with draining and disposing of the used oil are expected to be the same for both mineral oil and Envirotemp®FR3™ fluid. The cost of flushing and

filling the transformer with Envirotemp®FR3™ fluid versus mineral oil will be higher and range from approximately \$5 to \$8 per gallon. The accelerated life testing results performed by Cooper indicate the paper insulation around the windings showed less degradation for the Envirotemp®FR3™ transformers than the identical mineral oil transformers. Less degradation of the paper insulation per this test indicates the Envirotemp®FR3™ transformers may have a longer service life.

#### 6. Vendor's Comment

Cooper Power Systems provided the following information as part of the May 2002 Environmental Technology Verification report. The purpose of this section was to provide the vendor with the opportunity to share their comments on their environmental technology verification report. This information does not reflect agreement or approval by Cal/EPA.

#### Vendor's Comment:

*The aquatic toxicity test performed by the California EPA is not in accordance with the recommended sample preparation method for insoluble materials cited in the California Code of Regulations. Rather than using the appropriate solvent blending method for insoluble materials, they instead created an emulsion by extreme blending (several hours) of the vegetable oil based Envirotemp®FR3™ fluid with water. The resulting heavy emulsion produced is a physical hazard to fish. This prevented any evaluation of possible toxicological effects of the product.*

*Testing of acute aquatic toxicity on Envirotemp®FR3™ fluid was performed by an independent laboratory using the appropriate sample preparation method for insoluble materials. The tests resulted in a zero mortality of the trout fry throughout the test duration (96 hours).*

*We (Cooper) believe that it is essential that the acute aquatic toxicity test method be used for its stated purpose, the determination of relative systemic toxicity, and not misused to test physical hazard. Our environmental claim involving acute aquatic toxicity was limited to relative toxicity. Cooper Power Systems stands by its Verification Claim #4 submitted to the California EPA that Envirotemp®FR3™ dielectric coolant is not toxic to trout fry.*

#### **Certification Statement**

Under the authority of Health and Safety Code section 25200.1.5, the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid (Envirotemp®FR3™) is hereby certified as a pollution prevention technology subject to the specific conditions including the limitations/disclaimer set forth in the Certification Notice as published in the California Regulatory Notice Register on January 3, 2003,

Register No. 2003, Volume No. 1-Z. The technology is certified for use as a dielectric insulating fluid in transformers and electrical devices. Field test results show that the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid is a readily biodegradable, vegetable oil-based dielectric fluid with a flash and fire point above 300°C. The product has dielectric breakdown voltages comparable to mineral oils, silicone oils, synthetic esters, and high molecular weight hydrocarbons. Envirotemp®FR3™ samples from in-service transformers had flash and fire points above 300°C. Based on limited results performed on virgin product, the spent Envirotemp®FR3™ fluid may exhibit a hazardous characteristic per California's hazardous waste regulations. The end-user must characterize the spent Envirotemp®FR3™ fluid at the time of disposal since changes may occur to the oil due to use, storage, or age.

#### **Limitations of Certification**

DTSC makes no express or implied warranties as to the performance of the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid. Nor does DTSC warrant that the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid is free from any defects in workmanship or materials caused by negligence, misuse, accident or other causes. However, DTSC believes that the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid can be used in accordance with the conditions specified in this certification notice to achieve the results specified herein.

Use of the certified technology is limited to transformers and electrical devices as an insulating dielectric fluid. The product must also meet the requirements specified by Underwriters Laboratories (UL) for dielectric and transformer fluids, the Factory Mutual Research Center (FMRC) for a less flammable transformer fluid, and transformer installation requirements specified under the National Electrical Code (NEC).

#### **Specific Conditions**

1. Applicability. This certification is limited to use of the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid for use as a liquid dielectric coolant in transformers and electrical devices.
2. Uses for Transformers and Electrical Devices. This certification is limited to use of the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid in transformers and electrical devices as an insulating dielectric fluid. Use of Envirotemp®FR3™ fluid does not automatically classify the transformers as less flammable per the Factory Mutual Research Center definition. The user is responsible for assessing whether existing



transformers where Envirotemp®FR3™ fluid will be substituted for the original dielectric fluid (retrofilling) meets current NEC requirements.

3. Compliance with the Oil Spill Pollution Prevention and Management Requirements. Use of the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid must be in compliance with all federal, state, and local regulations which regulate the reporting of oil releases to the soil or water and their subsequent clean-up.
4. Compliance with Hazardous Waste Classification and Disposal Requirements. Prior to disposal, spent Envirotemp®FR3™ fluid and waste material generated from the clean-up of Envirotemp®FR3™ spills must be characterized per 22CCR Section 66261.20 and managed accordingly. Spent Envirotemp®FR3™ fluid or waste material from spills shall be tested for polychlorinated biphenyls (PCBs) if the transformer in question formerly contained a PCB laden oil. The disposal of virgin and spent Envirotemp®FR3™ fluid must be in compliance with all federal, state, and local regulations.
5. Compliance with Used Oil Management Requirements. The user shall be responsible for determining if spent Envirotemp®FR3™ fluid meets the definition of a used oil per 22CCR Section 66279.1(d), contains no more than 5 ppm of PCBs, and has a total halogen content of less than 1,000 ppm. If spent Envirotemp®FR3™ fluid meets these criteria, then it must be managed as a used oil and sent to a certified California waste oil recycler. If the spent Envirotemp®FR3™ fluid does not meet the used oil definition per 22CCR Section 66279.1(d) but meets the definition of a hazardous waste per 22CCR Section 66261.20, then the spent oil must be managed as a hazardous waste.
6. Compliance with Worker Health and Safety Laws. Use of the Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid in transformers must be in compliance with all federal, state and local regulations relating to the protection of worker health and safety. In California these include, but are not limited to, Cal-OSHA and OSHA requirements.
7. Personnel Training. Operators with knowledge and proper training in transformer sampling are required to collect samples from in-service transformers. Training includes but is not limited to safe operation and maintenance of the transformers, and knowledge of safe work practices and operating procedures for high voltage electrical equipment.
8. Compliance with Applicable Federal, State, Local Regulations. The user shall comply with all applicable federal, state, and local regulatory requirements.
9. Modifications and Amendments at the Request of the Applicant. Modifications and amendments to this certification may be requested by the applicant and shall be subject to approval by DTSC.
10. Certification Reference. The holder of a valid hazardous waste environmental technology certification is authorized to use the certification seal (California Registered Service Mark Number 046720) and shall cite the certification number and date of issuance in conjunction with the certification seal whenever it is used. When providing information on the certification to the user of the technology or another interested party, the holder of a hazardous waste environmental technology certification shall at a minimum provide the full text of the final certification decision as published in the California Regulatory Notice Register.
11. The user of the certified technology shall maintain adequate records to document compliance with the conditions of certification. The records shall be maintained onsite and available for inspection.

#### Regulatory Implications

This certification is for the specific claims, conditions, and limitations outlined in this notice, and are based on DTSC's evaluation of the technology's performance. The Certification does not change the regulatory status of Envirotemp®FR3™ Vegetable Oil-Based Insulating Dielectric Fluid; it should, however, facilitate and encourage the acceptance of this technology as a pollution prevention alternative to transformer oils containing PCBs, mineral oils, and silicone oils.

Use of this technology as a pollution prevention alternative does not require a hazardous waste management permit issued by DTSC. However use of the technology may be subject to regulation by other state and local agencies. For each specific application, the end-user must ensure compliance with all applicable regulations and standards established by other state and local agencies.

This Certification is issued under the California Environmental Technology Certification Program, and is therefore subject to the conditions set out in the regulations, such as the duration of the Certification, the continued monitoring and oversight requirements, and the procedures for certification amendments, including decertification.

By accepting this Certification, the manufacturer assumes, for the duration of the Certification, responsibility for maintaining the quality of the manufactured

materials and equipment at a level equal or better than was provided to obtain this Certification and agrees to be subject to quality monitoring by DTSC as required by the law, under which this Certification is granted.

### Duration of Certification

This certification will become effective on February 1, 2003 and will remain in effect for three years from the date of issuance (until February 1, 2006), unless it is amended or revoked for cause.

## CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

Notice to Interested Parties  
December 31, 2002

### Announcement of a Public Workshop January 28, 2003 to Discuss and Receive Public Comments on the Draft Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites

The Office of Environmental Health Hazard Assessment (OEHHA) of the California Environmental Protection Agency has made available the first Draft Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites. This draft guidance document was prepared to comply with California Health and Safety Code Section 901(f), which requires OEHHA to develop and publish a guidance document for use by the Department of Toxic Substances Control and other state and local environmental and public health agencies to assess exposures and health risks at existing and proposed school sites, and including child-specific routes of exposure unique to the school environment, in addition to those in existing exposure models. The draft document was posted on the OEHHA Web site on December 20, 2002. This one-day public workshop will be held from 10 AM to 3 PM on January 24, 2003, in the Sierra Hearing Room on the second floor of the Joe Serna (Cal/EPA headquarters) Building, 1001 I Street, Sacramento, CA, to discuss the scientific basis of the proposed guidance document. OEHHA follows the requirements set forth in Health and Safety Code, Sections 57003(a) and 116365, for conducting the workshop and receiving public input. Oral and written comments received at the workshop will be considered during the revision of the draft guidance document. Because there will be no official transcript of the meeting, we recommend that oral comments be also submitted in writing. Written comments must be received at **OEHHA by 5:00 p.m. on January 31, 2003, to be considered.**

Following the workshop and public comment period, OEHHA will evaluate all comments received, revise the document, and make the revised document available for a 30-day public review and scientific comment period. This second review and comment period will be announced and published in the California Regulatory Notice Register and posted on the OEHHA Web site. The responses to the significant comments from the public and scientific reviewers will be available on the OEHHA Web site upon publication of the final guidance document.

If you would like to receive further information on this announcement or have questions, please contact our office at (916) 323-6557 or the address below. Written requests or comments should be addressed to:

Mr. Leon Surgeon  
Integrated Risk Assessment Section  
Office of Environmental Health Hazard Assessment  
1001 I Street, 12th Floor  
Sacramento, California 95812-4010  
FAX: (916) 322-9705

## SUMMARY OF REGULATORY ACTIONS

### REGULATIONS FILED WITH SECRETARY OF STATE

This Summary of Regulatory Actions lists regulations filed with the Secretary of State on the dates indicated. Copies of the regulations may be obtained by contacting the agency or from the Secretary of State, Archives, 1020 O Street, Sacramento, CA, 95814, (916) 653-7715. Please have the agency name and the date filed (see below) when making a request.

### CONTRACTORS STATE LICENSE BOARD Contractors Fees

This emergency regulatory action adopts specified fees.

Title 16  
California Code of Regulations  
ADOPT: 811  
Filed 12/31/02  
Effective 01/01/03  
Agency Contact: Andrea Steele (916) 255-4074

### DEPARTMENT OF FISH AND GAME Cowcod Conservation Areas

Amends ocean commercial fishing in the Cowcod Conservation Areas in southern California to slightly increase the CCA's boundaries in order to conform and be in compliance with new federal CCA's boundaries. It is exempt from APA review per Fish and Game Code section 7652(d)

Title 14  
California Code of Regulations  
AMEND: 150.06(a)  
Filed 12/31/02  
Effective 12/31/02  
Agency Contact: LB Boydston (916) 653-6281

**DEPARTMENT OF INDUSTRIAL RELATIONS**  
Occupational Injury & Illness Recording  
Requirements

The regulatory action deals with hearing loss criteria for records of occupational injury and illness. The regulations become effective January 1, 2003 pursuant to Government Code section 11343.4, subdivision (c).

Title 8  
California Code of Regulations  
AMEND: 14300.10, 14300.12, 14300.29  
Filed 12/30/02  
Effective 01/01/03  
Agency Contact:  
Robert Nakamura (415) 703-5160

**DEPARTMENT OF INSURANCE**  
Workers' Compensation Rates

The Department of Insurance is amending the captioned sections pertaining to action [RH020221520] amending the Uniform Statistical Reporting Plan—1995 referred to in section 2318.6, and the Experience Rating Plan—1995 referred to in sections 2353.1 and 2354. These amendments are exempt from review by the Office of Administrative Law pursuant to Government Code section 11340.9(g) as they pertain to establishing or fixing rates, prices, or tariffs.

Title 10  
California Code of Regulations  
AMEND: 2318.6, 2353.1, and 2354.  
Filed 12/31/02  
Effective 01/01/03  
Agency Contact: Larry C. White (415) 538-4423

**DEPARTMENT OF INSURANCE**  
Holocaust Victim Insurance Relief Act of 1999

This readopted emergency rulemaking adopts procedures for insurance companies doing business in California to comply with the reporting requirements of the Holocaust Victim Insurance Relief Act of 1999.

Title 10  
California Code of Regulations  
ADOPT: 2278, 2278.1, 2278.2, 2278.3, 2278.5  
Filed 12/26/02  
Effective 12/26/02  
Agency Contact: Leslie Tick (415) 538-4190

**DEPARTMENT OF REHABILITATION**  
Excluded services and other goods and services

This emergency regulatory action defines "construction," "permanent fixture," and "real property" and makes other related amendments for purposes of clarifying that construction shall not be provided as a vocational rehabilitation service for individuals.

Title 9  
California Code of Regulations  
ADOPT: 7149.1 AMEND: 7174  
Filed 12/26/02  
Effective 12/26/02  
Agency Contact: Juanita Loyola (916) 263-8972

**DIVISION OF WORKERS COMPENSATION**  
Workers' Compensation—Audit

This regulatory action amends provisions concerning audits performed pursuant to Labor Code section 129 and 129.5, to conform to recent statutory changes.

Title 8  
California Code of Regulations  
ADOPT: 10114.1, 10114.2, 10114.3, 10114.4, 101002, 10103.2, 10106.1, 10107.1, 10111.2, 10113.1, 10113.2, 10113.3, 10113.4, 10113.5, 10113.6 AMEND: 10104, 10105, 10106.5, 10108, 10109, 10113, 10114, 10115.1 REPEAL: 10115.3  
Filed 12/30/02  
Effective 01/01/03  
Agency Contact:  
Destie Overpeck (415) 703-4659

**FISH AND GAME COMMISSION**  
North Coast Semaphore Grass

This action changes the status of North Coast semaphore grass (*Pleuropogon hoverianus*) in California from "rare" to "threatened".

Title 14  
California Code of Regulations  
AMEND: 670.2  
Filed 12/30/02  
Effective 01/29/03  
Agency Contact: John M. Duffy (916) 653-4899

**FISH AND GAME COMMISSION**  
Orcutt's Hazardia

This rulemaking lists the plant Orcutt's hazardia (*Hazardia orcuttii*) as a threatened species.

Title 14  
California Code of Regulations  
AMEND: 670.2  
Filed 12/26/02  
Effective 01/25/03  
Agency Contact: John M. Duffy (916) 653-4899



**FISH AND GAME COMMISSION**

**Seasonal Closure For CGS**

This regulatory action amends the commercial season for rockfish to conform to recent Federal requirements.

**Title 14**

California Code of Regulations

AMEND: 150.06, 150.16

Filed 12/30/02

Effective 01/01/03

Agency Contact: John M. Duffy (916) 653-4899

**FISH AND GAME COMMISSION**

**Cumulative Trip Limits For Cabezon, Greenlings and Sheephead**

This emergency regulatory action curtails catch levels in the fisheries for cabezon, greenlings and California sheephead.

**Title 14**

California Code of Regulations

AMEND: 150.16

Filed 12/30/02

Effective 01/01/03

Agency Contact: John M. Duffy (916) 653-4899

**CCR CHANGES FILED WITH THE  
SECRETARY OF STATE  
WITHIN AUGUST 28, 2002  
TO JANUARY 01, 2003**

All regulatory actions filed by OAL during this period are listed below by California Code of Regulation's titles, then by date filed with the Secretary of State, with the Manual of Policies and Procedures changes adopted by the Department of Social Services listed last. For further information on a particular file, contact the person listed in the Summary of Regulatory Actions section of the Notice Register published on the first Friday more than nine days after the date filed.

**Title 1**

10/29/02 AMEND: 1, 100

**Title 2**

12/19/02 ADOPT: 1859.200, 1859.201, 1859.202, 1859.203, 1859.204, 1859.205, 1859.206, 1859.207, 1859.208, 1859.209, 1859.210, 1859.211, 1859.212, 1859.213, 1859.214, 1859.215, 1859.216, 1859.217, 1859.218, 1859.218, 1859.219, 1859.220,

12/17/02 ADOPT: 599.723.2

12/10/02 ADOPT: 58700

11/26/02 AMEND: 57.1

11/18/02 AMEND: 589, 589.3, 589.4, 589.5, 589.9

11/14/02 AMEND: 2271

11/04/02 ADOPT: 1859.70.1, 1859.71.3, 1859.78.5, 1859.78.6, 1859.78.7,

1859.93.1, 1859.120, 1859.121, 1859.122, 1859.122.1, 1859.122.2, 1859.123, 1859.124, 1859.124.1, 1859.125, 1859.125.1, 1859.126, 1859.127, 1859.128, 1859.129, 1859.130, 1859.140, 1859.141, 1859

11/04/02 ADOPT: 549.95

10/31/02 ADOPT: 18531.7

10/31/02 AMEND: 51000

10/24/02 ADOPT: 2351

10/09/02 AMEND: 18539.2

10/04/02 ADOPT: 18544

10/04/02 AMEND: 1859.81, 1859.91

09/16/02 AMEND: 1859.79, 1859.79.3, 1859.81.1, 1859.83, 1859.107

09/12/02 AMEND: 18110, 18401, 18404.1, 18451, 18540, 18705.4, 18997

09/09/02 AMEND: 1859.92, 1859.104, 1859.105, 1859.107

**Title 3**

12/24/02 ADOPT: 1392.12

12/12/02 AMEND: 3417(b)

12/12/02 AMEND: 3423(b)

12/12/02 AMEND: 3417(b)

12/10/02 AMEND: 3700(b)

12/05/02 AMEND: 6550

12/03/02 AMEND: 6622

12/02/02 AMEND: 3423(b)

12/02/02 AMEND: 1392.1, 1392.2, 1392.4, 1392.9.1

11/12/02 ADOPT: 4600, 4601, 4602, 4603

11/07/02 AMEND: 6000, 6710

11/01/02 AMEND: 3417(b)

10/28/02 AMEND: 3604(b)

10/24/02 AMEND: 1380.19, 1430.10, 1430.12, 1430.14, 1430.26, 1430.27, 1430.32, 1430.45, 1430.50, 1430.51

10/17/02 ADOPT: 3650, 3651, 3652, 3653, 3654, 3655, 3656, 3657, 3658, 3659, 3660, 3661, 3662, 3663, 3663.5

10/09/02 AMEND: 1380.19(h), 1420.10, 1442.7 REPEAL: 1420.9, 1442.10

09/19/02 ADOPT: 6450, 6450.1, 6450.2, 6450.3, 6784 AMEND: 6000 REPEAL: 6450, 6450.1, 6450.2, 6450.3, 6784

09/10/02 AMEND: 3700(c)

09/09/02 AMEND: 6414

08/30/02 AMEND: 3423(b)

08/29/02 AMEND: 1408.3

**Title 4**

12/12/02 ADOPT: 12100, 12101, 12104, 12105, 12120, 12122, 12124, 12126, 12128, 12130, 12132, 12140, 12142

12/05/02 ADOPT: 12309, 12310 AMEND: 12300, 12301, 12302, 12303, 12305

10/15/02 ADOPT: 1867

**CALIFORNIA REGULATORY NOTICE REGISTER 2003, VOLUME NO. 2-Z**

- 10/07/02 ADOPT: 12300, 12301, 12302, 12303, 12304, 12305, 12306, 12307, 12308
- 09/12/02 ADOPT: 8110, 8111, 8112, 8113, 8114, 8115, 8116, 8117, 8118, 8119, 8120, 8121, 8122, 8123, 8124, 8125
- 09/03/02 AMEND: 1107
- Title 5**
- 12/23/02 AMEND: 80054.5, 80020.4.1
- 12/10/02 ADOPT: 11983.5
- 12/09/02 AMEND: 80054
- 12/05/02 AMEND: 30950, 30951, 30951.1, 30952, 30953, 30954, 30955, 30956, 30957, 30958, 30959
- 10/21/02 AMEND: 18301
- 10/17/02 ADOPT: 80434 AMEND: 80001
- 09/30/02 AMEND: 42356
- 09/30/02 AMEND: 42933
- Title 8**
- 12/30/02 AMEND: 14300.10, 14300.12, 14300.29
- 12/30/02 ADOPT: 10114.1, 10114.2, 10114.3, 10114.4, 101002, 10103.2, 10106.1, 10107.1, 10111.2, 10113.1, 10113.2, 10113.3, 10113.4, 10113.5, 10113.6
- AMEND: 10104, 10105, 10106.5, 10108, 10109, 10113, 10114, 10115.1 REPEAL: 10115.3
- 12/19/02 AMEND: 5221, 5223,
- 12/03/02 AMEND: 4794, 4848, 4850
- 12/02/02 AMEND: 3441(a)
- 11/18/02 ADOPT: 2980, 2981, 2982, 2983
- 10/01/02 AMEND: 3457(b)
- 09/25/02 AMEND: 451, 527
- 09/19/02 AMEND: 14004, 14005
- 09/12/02 AMEND: 1671.2
- 09/09/02 ADOPT: 13635.1, 13655, 13656, 13657, 13658, 13659 AMEND: 13630, 13631, 13632, 13633, 13634, 13635, 13637, 13638, 13639, 13640, 13641, 13642, 13643, 13644, 13645, 13646, 13647, 13648, 13649, 13650, 13651, 13652 09/03/02 ADOPT: 20299
- Title 9**
- 12/26/02 ADOPT: 7149.1 AMEND: 7174
- 11/26/02 ADOPT: 9526, 9531 AMEND: 9500, 9505, 9515, 9530, 9535
- Title 10**
- 12/31/02 AMEND: 2318.6, 2353.1, and 2354.
- 12/26/02 ADOPT: 2278, 2278.1, 2278.2, 2278.3, 2278.5
- 12/16/02 ADOPT: 1422, 1423
- 12/12/02 AMEND: 2632.8
- 12/12/02 ADOPT: 2699.6606, 2699.6711, 2699.6631, 2699.6717 AMEND: 2699.6500, 2699.6600, 2699.6605, 2699.6607, 2699.6611, 2699.6613, 2699.6617, 2699.6623, 2699.6625, 2699.6629, 2699.6631, 2699.6700, 2699.6703, 2699.6705, 2699.6709, 2699.6800, 2699.6801, 2699.680
- 12/05/02 AMEND: 2632.13(c)
- 11/22/02 ADOPT: 2689.1, 2689.2, 2689.3, 2689.4, 2689.5, 2689.6, 2689.7, 2689.8, 2689.9, 2689.10, 2689.11, 2689.12, 2689.13, 2689.14, 2689.15, 2689.16, 2689.17, 2689.18, 2689.19, 2689.20, 2689.21, 2689.22, 2689.23, 2689.24,
- 11/19/02 ADOPT: 2542, 2542.1, 2542.2, 2542.3, 2542.4, 2542.5, 2542.6, 2542.7, and 2542.8
- 11/18/02 ADOPT: 2187.4
- 11/14/02 AMEND: 5002
- 11/07/02 ADOPT: 2193, 2193.1, 2193.2 2193.3
- 11/04/02 ADOPT: 2698.99
- 10/31/02 ADOPT: 2632.13
- 10/16/02 ADOPT: 2660 AMEND: 2646.2, 2648.4, 2651.1, 2652.5 2655.1, 2655.5, 2655.6, 2655.10, 2656.1, 2656.2, 2656.3, 2656.4, 2657.2, 2658.1, 2659.1, 2661.3, 2697.3
- 09/25/02 ADOPT: 2698.90, 2698.91
- 09/25/02 AMEND: 250.9.1(a), 250.12(a), 250.51, 350.60(a), 260.001, 260.100.1, 260.100.3, 260.102.4(b), 260.102.8(b), 260.102.16, 260.103, 260.105.28, 260.105.33, 260.111, 260.112, 260.113, 260.121, 260.131, 260.140.71.2, 260.140.87(e), 260.140.110.2, 260.140.11
- 09/19/02 AMEND: 2851, 2851.1
- 08/30/02 AMEND: 5101
- 08/29/02 AMEND: 2698.200, 2698.201, 2698.301, 2698.302
- 08/28/02 AMEND: 2698.73
- 08/28/02 ADOPT: 2278, 2278, 2278.1, 2278.2, 2278.3, 2278.4, 2278.5
- Title 11**
- 12/04/02 ADOPT: 977.52 AMEND: 977.20, 977.43, 977.44, 977.45, 977.50, 977.51
- 12/03/02 AMEND: 1001, 1010 REPEAL: 1009
- 11/26/02 AMEND: 1005
- 10/10/02 ADOPT: 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 48
- 10/07/02 ADOPT: 1012 AMEND: 1001, 1004, 1005, PAM D-13 REPEAL: former 1005
- 09/18/02 ADOPT: 61.8
- 08/29/02 AMEND: 3000, 3001, 3003, 3007, 3008

**Title 13**

12/24/02 AMEND: 2261, 2262, 2262.4, 2262.5, 2262.6, 2262.9, 2265, 2266.5, 2269, 2271, 2272, 2296  
 11/25/02 AMEND: 810, 811, 812, 813, 814, 815, 816, 817, 818  
 11/04/02 ADOPT: 225.00, 225.03, 225.06, 225.09, 225.12, 225.15, 225.18, 225.21, 225.24, 225.27, 226.30, 225.33, 225.36, 225.39, 225.41, 225.45, 225.48, 225.51, 225.54, 225.57, 225.60, 225.63, 225.66, 225.69, 225.72, and related forms  
 10/18/02 AMEND: 1956.8  
 09/16/02 AMEND: 1960.1, 1960.5, 1961, 1962,

**Title 13, 17**

09/12/02 ADOPT: 1969, 60060.1, 60060.2, 60060.3, 60060.4, 60060.5, 60060.6, 60060.7

**Title 14**

12/31/02 AMEND: 150.06(a)  
 12/30/02 AMEND: 670.2  
 12/30/02 AMEND: 150.16  
 12/30/02 AMEND: 150.06, 150.16  
 12/26/02 AMEND: 670.2  
 12/19/02 AMEND: 11900  
 12/19/02 AMEND: 11900 and 11901  
 12/18/02 ADOPT: 3704.1  
 12/05/02 AMEND: 18419  
 12/03/02 AMEND: 2200, 2320, 2500  
 11/25/02 AMEND: 912.7, 932.7, 952.7  
 11/25/02 AMEND: 895.1, 929.1, [949.1, 969.1], 929.2, [949.2, 969.2], 929.3, [949.3, 969.3], 929.4, [949.4, 969.4] REPEAL: 929.5, [949.5, 969.5], 1037.5(a), 1052  
 11/21/02 AMEND: 791.7, 870.15, 870.17, 870.19, 870.21 and incorporated by reference form FG-OSPR -1972  
 11/21/02 AMEND: 1038(f)  
 11/18/02 AMEND: 2090, 2105, 2420, 2425, 2530 and 2690 renumbered to 2850  
 11/18/02 AMEND: 932.9, 952.9  
 11/14/02 AMEND: 895.1, 912.7, 913.1, 913.2, 932.7, 933.1, 933.2, 952.7, 953.1, 953.2  
 11/07/02 AMEND: 7.50(b)(5)(E), 7.50(b)(156)(H)  
 11/07/02 ADOPT: 749.2  
 10/28/02 AMEND: 1058.5  
 10/28/02 ADOPT: 4971  
 10/24/02 ADOPT: 17211, 17211.1, 17211.2, 17211.3, 17211.4, 17211.5, 17211.6, 17211.7, 17211.8, 17211.9  
 10/21/02 AMEND: 163, 163.5, 164  
 10/15/02 AMEND: 2030  
 10/09/02 ADOPT: 819.06, 819.07 AMEND: 815.03, 815.05, 817.02, 817.03, 818.02, 818.03, 819, 819.01, 819.02.8, 19.03, 819.04, 819.05

10/09/02 AMEND: 502, 507(c)  
 10/08/02 AMEND: 2135  
 10/03/02 AMEND: 3502  
 10/03/02 ADOPT: 3810, 3811, 3812, 3813, 3814, 3815, 3816, 3817  
 10/01/02 ADOPT: 3940, 3941, 3942, 3943, 3944, 3945, 3946, 3947, 3948  
 10/01/02 AMEND: 3650, 3652, 3653, 3655, 3656, 3658  
 09/30/02 AMEND: 3901, 3909, 3910  
 09/30/02 AMEND: 17400, 17402, 17402.5  
 09/19/02 AMEND: 3626, 3627, 3628  
 09/18/02 AMEND: 300(a) REPEAL: 502.1  
 09/12/02 ADOPT: 105.5 REPEAL: 195  
 09/12/02 AMEND: 120.3  
 09/09/02 AMEND: 550, 551, 552  
 09/09/02 ADOPT: 712  
 09/04/02 ADOPT: 104.1  
 08/28/02 ADOPT: 786.7, 786.8 AMEND: 786.0, 786.1, 786.2, 786.3, 786.4, 786.5, 786.6

**Title 15**

12/10/02 ADOPT: 3371.1  
 10/04/02 AMEND: 3025, 3315  
 09/30/02 AMEND: 3006

**Title 16**

12/31/02 ADOPT: 811  
 12/24/02 AMEND: 1399.25, 1399.26, 1399.27, 1399.28, 1399.29  
 12/24/02 REPEAL: 1382.1  
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 12/23/02 REPEAL: 1387, 1387.3, and 1387.5  
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 12/09/02 ADOPT: 2414 AMEND: 2411, 2418  
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 10/08/02 AMEND: 308  
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10/21/02 AMEND: 981.3(a)(b)(d)

10/10/02 ADOPT: 2735.3(rr), 2770.4.1 AMEND:  
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